LITERATURE REVIEW: Is There a Relationship Between Intrinsic/Autonomous and/or Controlled Motivation for Personal Goals and Depressive Symptoms? A Systematic Review

EMPIRICAL PAPER: Investigating How Different Motives for Goal Pursuit Predicts Rumination About Those Goals Using a Diary Design

Submitted by **Stephanie Davis**, to the University of Exeter as a thesis for the degree of **Doctor of Clinical Psychology**, May 2018

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LITERATURE REVIEW

Is There a Relationship Between Intrinsic/Autonomous and/or Controlled Motivation for Personal Goals and Depressive Symptoms?

A Systematic Review

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Target Journal: Clinical Psychology Review

Word Count: 5953

Submitted in partial fulfillment of requirements for the Doctorate Degree in Clinical Psychology, University of Exeter

Abstract

Background: Motivation is a known symptom of depression, however less is known about the different quality of motivation in relation to this. Self-Determination Theory is a motivational theory that relates well-being to autonomy, competence and relatedness. Pursuits of personal goals are a fundamental facet in daily life, thought to contribute to identity and a sense of meaning. Derivatives of self-determination theory suggest that goal pursuit that is autonomous (i.e., driven from the authentic self) has positive associations with well-being.

Objectives: This review summarises and synthesises the literature investigating intrinsic/autonomous and/or controlled motives for personal goals and their relationship with depressive symptoms.

Method: PRISMA guidelines were followed for this systemic review. Searches were carried out using MEDLINE, PsycINFO, and Web of Knowledge databases. All literature to date was reviewed, initially searched in titles/abstracts and then full texts. A quality evaluation tool was used to identify strengths and limitations. Search completed between 13th December 2017 and 12th February 2018. Articles searched were from the earliest possible date included in the database until the final search date.

Results: 107 records (excluding duplicates) were reviewed at the abstract/title review stage. 11 articles were reviewed at the full text stage and following this six relevant papers were included, consisting of five cross-sectional studies and one prospective study. Of the six studies reviewed, three found that depressive symptoms were significantly negatively associated with autonomous motivation. One study found a significantly negative association between depressive symptoms and intrinsic motivation. Two studies reported depression to be positively significantly associated with controlled motives for goal pursuit and one reported depressive symptoms to be positively significantly associated with external and introjected motives (subsets of controlled motives). However, effect sizes for these associations were small to medium and furthermore, there is little understanding of causal relationships between depressive symptoms and motives because of the limited study designs.

Conclusions: Review of these studies identified a relatively consistent association between autonomous goal pursuit and reduced depressive symptoms and controlled goal pursuit with increased symptoms of depression. Understanding the relationship between goal motives and depressive symptoms is important as goals are a common focus within therapy, therefore, understanding more about the relationship between goal motives and depression can inform therapeutic interventions. Appropriate additional research is outlined.

Keywords: autonomous, controlled, motives, depression, goals.

Introduction

The review aims to explore the relationship between intrinsic/autonomous motivation and/or controlled motivation for personal goals and experience of depressive symptoms. The rationale for this review is to better understand the relationship between different goal motivations and symptoms of depression, with a view to identifying potential gaps in the research and recommendations for future research.

Depression

Depression is thought to be the most prevalent mental health problem experienced worldwide (Vos et al., 2015), with at least 10-20% of the population thought to experience an episode of major depression within their lifetime (Blazer, Kessler, McGonagle, & Swartz, 1994). Although depressive disorders can feature a variety of different symptoms, the American Psychiatric Association (2013) state that they all share the core experience of sadness or low mood alongside physical or cognitive changes that impact on a person's ability to engage in day to day living (American Psychiatric Association [APA], 2013). One does not need to be clinically depressed in order to experience depressive symptoms, but experience of depressive symptoms can be a risk factor to developing depression (Dobson & Dozois, 2011). Supporting this, Fergusson and Woodward (2002) found that in a study of 14-16 year olds, individuals that had experience of depressive symptoms were much more likely to develop depression, anxiety and other mental health difficulties later in life. The other key symptom of depression is loss of pleasure or motivation (Lindsay & Powell, 2007). It is thought that depressed people experience

a deficit in motivation as a result of having pessimistic expectancies (Layne, 1980). Motivational deficits can be divided into two areas; anticipating positive events (wanting) and enjoying positive events (liking, anhedonia) (Franzen & Brinkmann, 2016).

Goals

Goals are internal representations of desired states and are inherent in human functioning. Historically goals have been seen as a way of needs being met (Maslow, 1943). Personal goal pursuit is considered to be important in developing one's identity (Sheldon & Kasser, 1995) and when goal pursuit is meaningful it is associated with increased well-being (Diener, 1984).

Orientating to the future begins in adolescence; children under 15 years of age have basic planning skills and these skills develop with age enabling goal setting, planning and evaluation (Nurmi, 1991). Goal setting is often used within a therapeutic context and can be the basis of the work and a way of monitoring progress (Simos, 2008). However, it is not necessarily the content of a goal, but the motivation behind goal pursuit that is important to understanding and supporting goal attainment and well-being (Kasser & Ryan, 1996).

Goals are often categorised as being approach or avoidance goals dependent on their directionality (Carver & Scheier, 1998; Elliot, 2006). Approach goals are defined as future representations of a desired consequence (e.g., completing an assignment), whereas avoidance goals are defined as future representations of an undesired consequence (e.g., to avoid getting into trouble).

Depression has often been associated with a deficit in the approach system. Depressed people are not thought to differ in the number of goals held compared to nondepressed people (Dickson, Moberly, & Kinderman, 2011), research has shown depressed people hold a higher level of avoidance goals (Sherratt & MacLeod, 2013) and a study looking at dysphoric students found they had fewer approach goals (Dickson & MacLeod, 2004b). Motivational theories have suggested that it is not goal content or whether goals are approach or avoidance directed that is important for understanding the relationship with depressive symptomology, but the motivation behind the goal itself (Ryan & Deci, 2000).

Goal motives

Motivation is the desire and action initiated in goal directed behaviour. Depressed people may not just be less motivated but may also have different reasons for pursuing goals. Research has been interested in how to increase or decrease motivation in order to achieve a goal but it has been found to be more important to understand the type of motivation for goal pursuit rather than the amount, when looking at goal attainment (Deci & Ryan, 1985). Deci and Ryan (1985) developed Self-Determination Theory (SDT; Deci & Ryan, 1985) which categorises the degree to which a person or a behaviour is self-motivated and self-determined. Deci and Ryan (1985) postulate that in order to experience well-being, three psychological needs must be met: competence (feeling confidence and effective in the activity), relatedness (to feel cared for and care for others, belongingness) and autonomy (feeling that one has chosen one's activity). Self-determined behaviours are carried out because they are either intrinsically important

to that person or out of interest and enjoyment in the activity. Organismic Integration Theory (Ryan & Deci, 2000) is theoretically descended from Deci and Ryan's (1985) self-determination theory and relates to a person's need for autonomy. This is the extent to which a person's goals are perceived to originate from the authentic self rather than being externally driven.

Ryan and Connell (1989) classified motivation in terms of four distinct reasons for why individuals pursue goals. These are intrinsic (because the goal will provide fun and enjoyment), identified (because the goal is important and valuable), introjected (to avoid feelings of shame or guilt) and external motivations (doing for someone else or for extrinsic reward such a payment). Intrinsic and identified motives are autonomous regulatory modes, whereas introjected and external motives are controlled regulatory modes (Deci & Ryan, 2000). In essence, autonomous motivation means an individual has a full sense of willingness and choice. Autonomous motivation has been related to higher levels of goal progress (Moberly & Dickson, 2016), well-being, engagement and attainment (Sheldon & Elliot, 1998). Controlled motivation refers to doing something to gain reward or to avoid punishment (either internal feelings or shame or externally) and has been related to higher levels of goal conflict (Emmons & King, 1988) and poorer attainment (Koestner, Otis, Powers, Pelletier, & Gagnon, 2008). Furthermore, controlled motivation has been associated with ill-being (Ryan, Rigby, & King, 1993).

The self-concordance model (Sheldon & Elliot, 1999) derives from SDT and states that goals are self-concordant when they are pursued for autonomous reasons. Self-concordant goal pursuit reflects the balance between autonomous

and controlled motivation, therefore individuals high in autonomous motivation and low in controlled motivation have self-concordant goal motivation. Self-concordant goal pursuit has been positively associated with subjective well-being as well as effort on goals, which depressed individuals struggle with and this has been found regardless of cultural orientation (Sheldon, Ryan, & Deci, 2004).

Rationale

This review aims to understand how motives for personal goals are related to well-being, given the importance of goals for a sense of purpose and meaning, and to structure behaviour. Goals are therapy targets and identifying goals may not be enough if clients have unhelpful motives that do not sustain goal-directed behaviour. Interventions should consider motives for goals with a view to supporting clients in honing their motivations to increase likelihood of goal attainment and well-being. Adolescents will be included within this review because goals become increasingly important in adolescence and through adulthood (Nurmi, 1991) and studies that have contributed to goal theory and motivations for goals have included these populations (Ames, 1992; Ryan & Deci, 2000). A further benefit of extending the age range was to pull in more studies for review. There have been no recent reviews that consider this topic area.

Research Question

Is there a relationship between intrinsic/autonomous and/or controlled motivation for personal goals and depressive symptoms?

Method

Within this systematic review the Preferred Reporting Items for Systematic reviews and Meta Analyses (PRISMA) Statement guidelines were followed (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009).

Eligibility Criteria

Categories used for identification of inclusion and exclusion criteria were population, exposure, comparator, outcome and studies (PICO; O'Connor, Green, & Higgins, 2011) (See Table 1).

Inclusion/Exclusion Criteria

Participants

Participants included within the review were adolescents and adults. The World Health Organisation's (WHO, 1986) definition of adolescence starts at 10 years of age; therefore studies were included if they included participants over 9 years old. Clinical and nonclinical populations will be included to extract the greatest possible information about the association.

Exposure

Studies included in the review used either a psychometrically valid measure of depressive symptoms or included participants who had a diagnosis of current major depression (by mental health professional or research instrument). Studies excluded were those where participants had a diagnosis of a learning disability or any other comorbidity, e.g., brain injury, psychosis/schizophrenia, substance abuse. The reason for excluding psychosis and schizophrenia is that intrinsic motivation

has been researched well within this population (Barch, Yodkovik, Sypher-Locke, & Hanewinkel, 2008) and this review aims to isolate to depressive symptoms.

Comparator

Studies were included if they analysed depressive symptoms as a continuous measure, or studies that have compared depressed persons to non-depressed controls within the community.

Outcome

The inclusion criterion was studies in which the outcome measure was autonomous and/or controlled motivation (and the subdivision of intrinsic motivation which is within autonomous motivation) for participant-generated personal goals. To ensure inclusion of appropriate papers, intrinsic motivation is defined as individuals pursuing something for enjoyment or interest, this is a form of autonomous motivation, which means it is more internalised to the individual. Also incorporated are studies that report the relative balance of autonomous versus controlled motivation for goals. Almost all research that has examined motives has used self-report but other methodologies will be considered. Personal goals were defined as self-generated representations of desired future states (either approach- or avoidance-oriented) that are relevant to the person's 'outside' life as opposed to within a research context. Studies were excluded if they explored motives for goals that are generated by the participant or researcher purely within the research setting or that examined actual, reported, or anticipated enjoyment of activities when goals are not measured or reported.

Table 1

Inclusion and Exclusion Criteria

	Inclusion Criteria	Exclusion Criteria
Population	Humans over 9 years old.	n/a
Exposure	Depressive symptoms on psychometrically valid measure or diagnosis of current major depression (by mental health professional or research instrument)	Presence of a learning disability or any other comorbidity, e.g., brain injury, psychosis/schizophrenia, substance abuse.
Comparator	Studies analysing depressive symptoms as a continuous measure, or studies that have compared depressed persons to healthy non-depressed controls.	None
Outcome	Studies measuring autonomous/controlled motivation (or their subdivisions) for participant-generated personal goals. Studies that measure the strength of autonomous vs. controlled motives.	Studies in which goals are generated by the participant or researcher purely within the research setting. Studies that examine actual, reported, or anticipated enjoyment of activities when goals are not measured or reported.

Studies	Quantitative studies including correlational designs, case-control designs, longitudinal designs, randomised controlled trials of depression treatments, where motivation is measured pre and post treatment.	Review articles, case studies, qualitative studies. Non-peer reviewed studies. Studies not written up in English language.

Study Design

Information Sources

Papers for review were searched using PsycINFO as this is a large psychology database, Medline to incorporate research by allied health professionals and Web of Science as this is a general database of scientific research with good coverage of psychology. Due to time limitations grey literature was not searched. Articles searched were from the earliest possible date included in the database until the 12th February 2018.

Search Strategy

The search terms entered for depression, goals and motivation are detailed in Table 2. Database-specific truncation was used (e.g., depress* to cover depressed, depression, depressive) and search terms were further combined using appropriate Boolean operator “OR” and “AND” to look for alternate words within the section and to combine search terms across the sections (Table 2).

Table 2

Search Terms for Web of Science

Individual Search Terms		
Depression	Depress* OR dysphor* OR dysthym*	AND
Autonomous/controlled motives	Intrins* OR autonom* OR self-concord* OR self concord* OR autotelic* OR control*	
Goal	Goal* OR strivin* OR personal project* OR current concern* OR life task*	
Motivation	Motiv* OR reason*	

Study Selection

The initial search retrieved a total of 157 papers, which fell to 107 following screening for duplicates (see Figure 1). Initial screening of titles and abstracts of the 107 studies were carried out based on PECOS criteria. Eleven papers were deemed eligible for full text review. At this stage an independent reviewer evaluated eight studies for reliability of eligibility based on the PECOS criteria. Discrepancies were found on six studies. Following this, discrepancies were discussed which resulted in reaching agreement regarding one study which remained in the review and five studies being eliminated from the review. Of the five papers that were excluded following discrepancy discussion, two were removed because goal

motivation was not explicitly measured, two because they measured depressive experiences and not symptoms and one due to participants having comorbidity with persecutory delusions and schizophrenia (see Table 1). This left a total of six papers for full review. Although this is a small number of studies, this was the most sensible way of conducting the review, as other questions would not have been conceptually coherent.

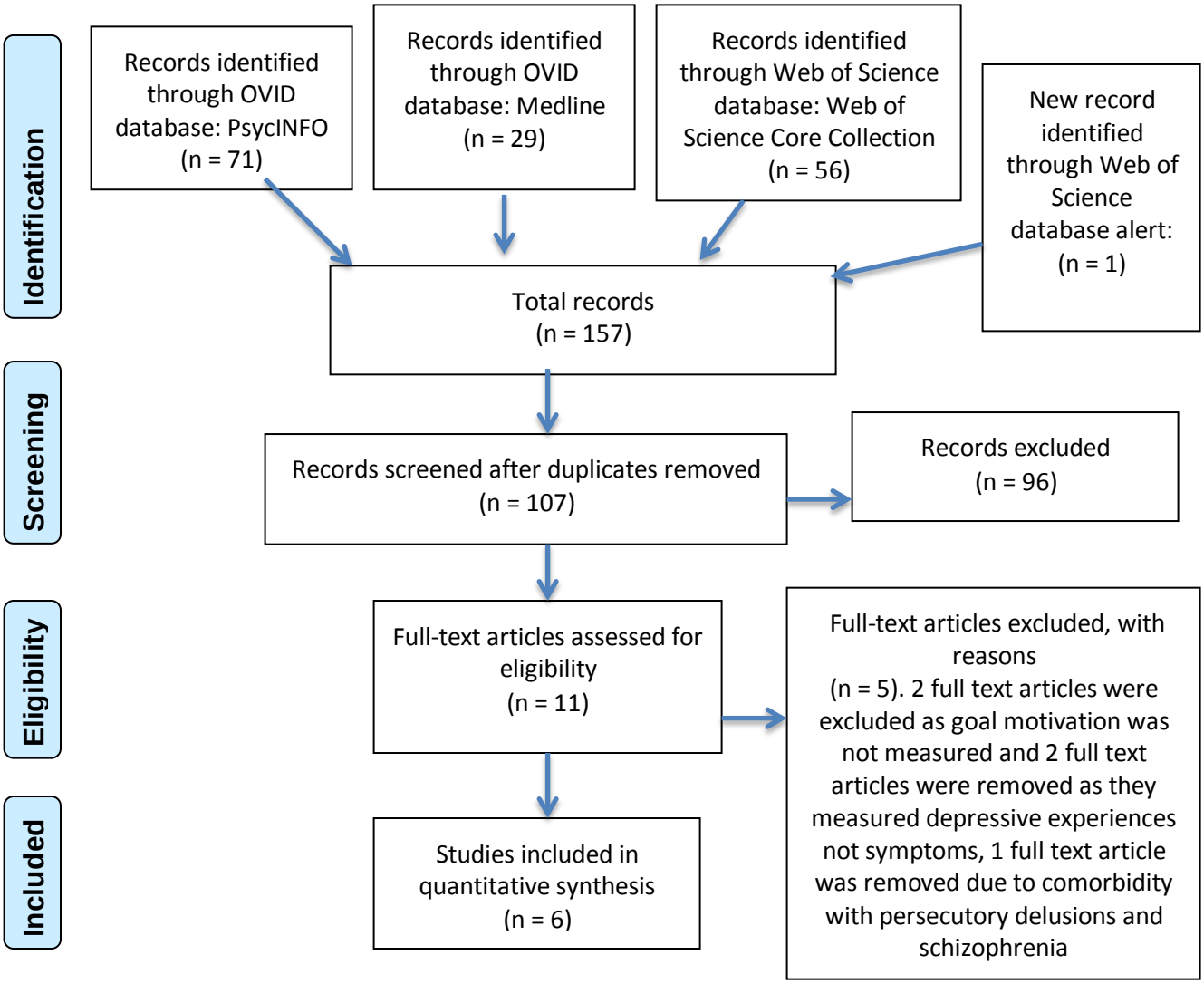

Figure 1. Identification of articles for full review. Based on PRISMA flowchart (Moher et al., 2009).

Data Extraction

Data extraction from the studies was based on the population, intervention, control, outcomes (PICO; O'Connor, Green, & Higgins, 2011) method and summarised in Table 1. Population included any studies using humans over the age of nine. Exposure pulled studies that reported on depressive symptoms based on a psychometrically valid measure or diagnosis of current major depression (by mental health professional or research instrument). Comparators were studies that analysed depressive symptoms as a continuous measure, or studies that compared depressed persons to healthy non-depressed controls. Outcome criteria included studies that reported on autonomous/controlled motivation (or their subdivisions) for participant-generated personal goals or studies that measured the strength of autonomous vs. controlled motives. Studies included were quantitative. Data extraction was carried out by reading the studies identified in the search and then copying extracted data into a Word document.

Quality Evaluation

To provide criteria for the critique, the Critical Appraisal Skills Programme checklists (CASP, 2018, see Appendices A & B) for case control and cohort studies were used as a guide, as was the Quality Assessment Tool for Quantitative Studies (QATQS; Effective Public Health Practice Project, 2009, see Appendices C). These were used as they were the most suitable tools for these particular study designs. No score was reported due to a number of the questions not being relevant, therefore reporting was in the style of strengths and limitations of the studies . No studies were excluded based on quality criteria. At this stage an independent rater

reviewed three of the studies, following discussion regarding discrepancies on one of those studies, 100% interrater reliability for quality was found.

Results

Six papers were deemed eligible for this review. Table 3 illustrates all of the main characteristics of the studies, including the aims of the study, the sample size, and measures used for goal motivation and depression, as well as a summary of the strengths and limitations. The number of studies was much lower than originally anticipated, highlighting the dearth of literature in this area.

Table 3

Summary of Eligible Papers

Authors/Year	Study Design and aims	Sample	Measure of motivation, measure of goals	Measure of depression/ depressive symptoms	Main findings	Evaluation: Strengths and limitations and overall score derived from quality ratings
Ong, & Phinney, 2002).	Cross sectional study looking at personal goals and depression comparing Vietnamese American and European American samples.	College students *N* = 276 Age 18-25	Five personal strivings provided based on Emmons (1986). Striving motivation rated as external, introjected, identified and intrinsic (Ryan & Connell, 1989)	Centre for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)	Mediational analysis found that autonomous motives for goals mediated the relationship between ethnicity and depression (R^2 = .20).	Strengths: Sample size Five strivings reported Limitations: College sample lacks ecological validity Cross-sectional measure. No correlations reported Motivation measures have no reliability or validity reports but have been used in past research. No confounders of the relationship between motives and depression examined. Overall score: Moderate
Scott, Dearing, Reynolds, Lindsay, Baird, & Hamill (2008).	Cross sectional study looking at self-regulatory processes and depression within American Indian population	Adolescent Age 13-19 *N* = 112	Two personal strivings reported based on Emmons (1986). Two item measure of goal orientation, taps into autonomous vs. controlled motivation	Inventory to diagnose depression (IDD; Zimmerman & Coryell, 1987)	Target of at risk population (Native American youths), higher self-orientation (autonomous) was significantly positively associated with higher depressive symptoms for older students (*r* = .38).	Strengths: Does not use university sample Limitations: Age range not generalisable to general population. 82.2% of reported goals were academic Autonomous goal measure is non-standard with unclear validity Only two goals reported. Cross sectional design Overall score: Weak
Tyser, Scott,	Cross sectional	Adolescent	Four personal	Childhood	Personal striving	Strengths:

Readdy, & McCrea (2014).	study looking at goal representations, identity and optimism and depressive experiences in American Indian Population.	s *N* = 164	strivings reported based on Emmons (1986).Two item scale to establish autonomous vs. controlled motivation (Scott et al., 2008).	Depression Inventory (CDI; Kovacs, 1985, 1992)	inventory score for autonomous motivation was negatively associated with depressive symptoms on childhood depression inventory (*r*= -.29)	Looked at four personal goals Motivation measure used in previous research, but non-standard for SDT research Limitations: Age range not generalisable to general population. Cross-sectional design Autonomous goal measure is non-standard with unclear validity Overall score: Moderate
Winch, Moberly, & Dickson (2015).	Cross-sectional study looking at associations between anxiety, depression and motives for approach and avoidance goal pursuit.	Undergrad students *N* = 136 Age 18-51	Four approach and four avoidance goals, based on Dickson and MacLeod's (2004a) study. Motives for goal pursuit rated as external, introjected, identified and intrinsic (Ryan & Connell, 1989)	Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001).	Depressive symptoms significantly negatively correlated with intrinsic motivation for approach goals (*r* = -.21). Reduced intrinsic motives for approach goals were uniquely associated with depressive symptoms, the previous relationship was only significant in women not men. Depressive symptoms were significantly positively correlated with external regulation for approach (*r* = .18) and avoidance (*r* = .23) goals and with introjected motives for approach goals (*r* = .22) and with identified regulation for approach goals (*r* = .18).	Strengths: Measures valid and reliable or been used extensively in this area of research Limitations: University sample lacks ecological validity Cross-sectional design Self-report measures used which may not be reliable Overall score: Strong

Yi, Gore, & Kanagawa (2014).	Cross sectional study looking at personally and relationally autonomous reasons for goal pursuit in American and Japanese populations.	Undergrad students n = 170	Participants were asked to list seven goals. Personally autonomous reasons (PARs) and relationally autonomous reasons (RARs) (Gore & Cross, 2006)	Centre for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977)	Personally autonomous reasons for goal pursuit were negatively related with depression for both American (r = -.28) and Japanese (r = -.24) participants. Relationally autonomous reasons for goal pursuit were negatively associated with depression in American participants (r = -.24) but not with Japanese participants.	Strengths: differentiating between personally or relationally autonomous reasons for goal pursuit, diverse sample Limitations: Cross-sectional design Student sample lacks ecological validity Self-report measures used which may not be reliable Overall score: Moderate
Holding, Hope, Harvey, Marion Jetten, & Koestner, (2017).	Multi-wave prospective longitudinal cohort study looking at goal pursuit and disengagement severity relating to autonomous and controlled motivation over an eight month period	University students aged 17-27 N = 425	Participants asked to list 3 personal goals using instructions from Koestner et al. (2002). Autonomous and controlled motivation for goals derived from five items of motivation: intrinsic, integrated, identified, introjected and external (Sheldon & Kasser, 1998)	Centre for Epidemiologic Studies Depression Scale Revised (CESD-R 10; Bjorgvinsson, Kertz, Bigda-Peyton, McCoy, & Aderka, 2013)	Mean autonomous motivation was significantly negatively associated with depressive symptoms at the beginning of the academic year (r = -.15). Action crises severity at the second time point mediated the relationship between controlled motivation and time point one and symptoms of depression at time point three.	Strengths: Longitudinal design, large sample size Limitations: University sample lacks ecological validity Goal and motivation measures have no reliability or validity reports but have been used in past research Overall score: Moderate

Critical Summary

All six studies reported a relationship between autonomous and/or controlled motivation for personal goals and depressive symptoms. These findings will be discussed in more detail.

Participants

The sample sizes across all of the studies ranged from 112-425 participants. Participants in these studies were all in education, whether school, college or university providing analogue samples, the youngest age reported was 13 years of age. Therefore, this population is not generalisable to the general public. There were no studies that included clinical participants.

Designs

The research designs were five cross-sectional and one prospective study. These studies were only able to identify associations and were not able to support inference of causal direction.

Depressive Symptom Measures

Four different measures of depression were used within these studies that will discussed further in this section. The Centre for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used within two of the studies in this review. This has been found to be a reliable and valid measure of depression (Beekman, Deeg, Van Limbeek, Braam, De Vries, & Van Tilburg, 1997). One study used the revised version of this, the Centre for Epidemiologic Studies Depression Scale Revised (CESD-R 10; Bjorgvinsson

et al., 2013), which has also been reported to have good reliability and validity (Van Dam & Earleywine, 2011). One study used the Inventory to Diagnose Depression (IDD; Zimmerman & Coryell, 1987), this has been found to reliably measure depressive symptoms within a college population (Goldston, O'hara, & Schartz, 1990). One study implemented the Childhood Depression Inventory (CDI; Kovacs, 1985, 1992), depression was identified and measured within this population and the CDI showed to be a reliable measure of this (Smucker, Craighead, Craighead, & Green, 1986). The Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001) was also used, this was found to be a valid and reliable measure within the general population (Martin, Rief, Klaiberg, & Braehler, 2006). Therefore, all measures used for depressive symptoms had good reliability and validity, an explanation for this is that depression is a well-researched area hence having more robust measures in place to evaluate this construct

Personal Goals

Participants were asked to provide information regarding their personal goals, all were collated through non-standardised self-report measures. Three of the studies based this task on a shortened version of the personal strivings list (Emmons, 1986), asking for participants to write down what they "typically try to do", studies requested participants provide two, four and five personal goals. One study asked participants to write down four approach and four avoidance goals, based on Dickson and MacLeod's (2004b) study. These were based on future experiences they would either like to achieve or avoid by reporting on "in the future it will be important for me to….".

Therefore, this study examined motives within the context of the approach vs. avoidance goal construct. One asked participants to list three personal goals using instructions from Koestner, Lekes, Powers and Chicoine's (2002) study, which required participants to list the goals that they have for the upcoming weekend and one study asked participants to write a list of seven goals but did not report on any further instructions given. Therefore five of the six studies used a measure for goal reporting that has face validity as they had been used in past research.

Motivation Measures

Four of the studies measured goal motivation based on the following four categories: identified, intrinsic, introjected and external (Ryan & Connell, 1989). Winch et al. (2015) reported individually on each of these goal motives whereas three studies used broader goal motivation categories of autonomous and/or controlled motivation. These were developed by asking participants to report their goal motivation based on the four components described above and summing to form aggregated autonomous and controlled motive constructs. Holding et al. (2017) created autonomous and controlled scores by adding the mean score of intrinsic and identified motivation to measure autonomous motives and adding the mean scores for external and introjected motives to measure controlled motives. As with other studies of goal motivation (Sheldon & Elliot, 1999), Ong and Phinney (2002) only reported results for the relative autonomy index, which they calculated in line with self-concordance goal motivation. To create this score they summed scores for intrinsic and identified motivation (autonomous) and subtracted the

scores for introjected and external (controlled). Yi et al. (2014) created autonomous scores for both personally autonomous reasons (PARs) and relationally autonomous reasons (RARs). PARs are based on self-concordance theory, in that they have high levels of autonomy but are related to the individual's needs, e.g., "my interest", RARs are motives that are relationally driven but still intrinsic, e.g., "our interests" (Gore & Cross, 2006). Participants were asked to report on the motivations of their PARs and RARs, scores were calculating subtracting the sum of the controlled items from the sum of the autonomous items as in Yi et al. (2014). The remaining two studies looked at motivation as autonomous versus controlled by calculating scores based on a two-item measure of goal orientation. This is not used in the wider literature so there is some question about its validity. Higher scores meant the goal was more autonomous. The motivation measures used in four of these studies have been used in past research, however all are reported in different ways. Scott et al. (2008) developed and reported on a novel measure and this was also used by Tyser et al. (2014). Although all measures were explained in terms of autonomous and/or controlled motivation these methods do not measure the same constructs. This highlights the need for a tool to be developed that is valid and reliable when assessing goal motivation and for some clarity regarding measuring and reporting on these constructs. Recent meta-analysis suggests that it is best to measure motives on a continuum rather than dividing into autonomous and controlled because of the positive correlation between identified and introjected motives (Howard, Gagné, & Bureau, 2017).

Critical Synthesis

Due to the small number of studies found for review this section will critically evaluate the individual studies. Where reported, effect sizes will be discussed (Cohen, 1992). As all studies used self-report measures, this is a limitation of all studies included in this review, meaning that the construct being studied may not accurately be being measured and therefore brings validity into question.

Yi et al. (2014) compared across cultures between 170 American and 219 Japanese participants. The found that personally autonomous reasons for goal pursuit were negatively related with depressive symptoms for both American and Japanese participants, both were small to medium effect sizes. Relationally autonomous reasons for goal pursuit were negatively associated with depressive symptoms in American participants but not with Japanese participants, again effect size was small to medium. This may imply that relationships between motives and depressive symptoms may depend on individualist versus collectivist cultures although there was some cross-cultural similarity. Cultural difference may shape the association between motives and depressive symptoms in relation to values held. For example, in comparison to individualistic cultures, collectivist cultures place less value on personal choice (Iyengar & Lepper, 1999). This study found a negative relationship between autonomous motivation and depressive symptoms for goals pursued for personally autonomous reasons cross-culturally, whereas for relationally autonomous reasons the association was only found for American participants. The small to medium effect sizes imply that the

strength of the relationships found were small, however this study was deemed to be of moderate quality based on the strengths and limitations identified in Table 3 and therefore the findings are considered to be noteworthy.

Scott et al. (2008) recruited 112 Native American adolescents. Their methodology regarding goal orientation measure was insufficient in this study, partly due to poor reporting of the measure. Measures of self-orientated (similar to autonomous) motives versus controlled motivation were based on questions looking at goal orientation. 'Goal orientation' questions asked whether the goal was something they wanted for themselves (self-orientated) or something they wanted for others (other-orientated). Unusually, goal self-orientation (autonomous motivation) was positively associated with depressive symptoms, this was a medium effect size. They relate this unexpected finding to cultural differences in that this is a collectivist community and pursuit of self-orientated goals may mean progressing in education and moving away from the support of the community. However, contradicting this, Juntunen, Barraclough, Broneck, Seibel, Winrow and Morin (2001) found that career and the contribution this makes to the community are highly valued within American Indian cultures, so if one engages in activities that can progress career opportunity, this is celebrated individually and collectively. Furthermore their explanation of goal orientation within this study appeared muddled and is a weakness in the reporting of the construct and their findings. This study found a positive relationship between autonomous motivation and depressive symptoms with a medium effect size which suggests some importance. However, the quality rating for this study

was weak and as a result, Scott et al.'s (2008) findings need to be considered with caution.

Tyser et al. (2014) expanded on Scott et al.'s (2008) study by incorporating other potential variables that may influence depressive symptoms. These were cultural identity, goal conflict, goal self-efficacy, dispositional optimism and self-reported grades. They recruited 164 American Indian adolescent high school students. They used the same goal motive measures as Scott et al. (2008), i.e., autonomous versus controlled motivation based on questions assessing 'goal orientation'. Correlations identified a small to medium effect size for autonomous (versus controlled) motivations for goals being significantly negatively associated with depressive symptoms. Contrary to Scott et al. (2008) and in line with theory, they did not find that autonomous goal motivation predicted symptoms of depression. Multiple regression analyses found that grade level, goal motivation, goal conflict and cultural identity did not predict depressive symptoms. This highlights the importance of adding other variables that may account for relationships and is a strength of this study. In summary, this study found a negative relationship between autonomous motivation and depressive symptoms with a small to medium effect size. This relationship was independent of other variables observed. The quality rating for this study was moderate and therefore is of note.

Ong and Phinney (2002) compared 121 Vietnamese American college students to 155 European American college students, to identify whether the relationship between ethnicity and depressive symptoms are mediated

through goal self-concordance. The sample size and sample diversity is a strength of this study. A weakness of this study is that no correlations were reported. They found that autonomous motives for goals act as a mediator of the association between ethnicity and depressive symptoms, explaining 20% of variance (R^2 = .29). These findings were found across both ethnic groups which highlights that the motives that people have for their goals may be more relevant to depressive symptoms than cultural explanations or that the associations between motives and depression is somewhat valid cross-culturally. A further weakness of this study is that it included no confounder variables. This study identified that autonomous motives for goals mediated the relationship between ethnicity and depression, identifying a relationship between autonomous motivation and depressive symptoms. The quality rating for this study was considered to be moderate, so the findings hold some credence, however, they would hold more weight if they had reported correlations.

Winch et al. (2015) looked for unique associations between anxiety, depression and goal motives for approach and avoidance goal pursuit in 136 undergraduate university students. A strength of this study was that approach and avoidance goal pursuit was incorporated; this is a different conceptual framework for explaining goals so enables a broader understanding of goal pursuit, in particular because approach goals which seem “healthy” may be motivated by avoidance/extrinsic forces. Depressive symptoms were significantly negatively associated with intrinsic motivation for approach goals. Depressive symptoms were significantly positively associated with external regulation for approach goals and avoidance goals and avoidance although

the effect sizes were small. Depressive symptoms were also significantly positively associated with introjected motives for approach goals and significantly negatively associated with intrinsic goals, again effect sizes were small. A weakness of this study if that it did not consider confounding variables, apart from gender (i.e. other things could explain the relationship between motives and depression). A strength of this research is that they were able to identify that depressive symptoms uniquely predict reduced intrinsic motivation for approach goals. Another advantage of this research is that it looked at the relationship with anxiety and found differences, so was able to report specifically about the relationship with depressive symptoms. This study found a negative relationship between intrinsic motivation and depressive symptoms and a positive relationship between external motivation and depressive symptoms. All effect sizes were small which implies only slight importance should be placed on these findings, however, this study was given the quality rating of strong and consequently the findings described hold weight for the relationship between depressive symptoms and reduced intrinsic motivation.

Holding et al. (2017) aimed to look at action crises, which occurs when an individual is faced with challenges in goal attainment, and they experience a decisional conflict where one must decide whether to continue with goal pursuit or disengage with the goal. Therefore, their primary aim was not to measure motives and depressive symptoms but depression was included as a potential confounding variable. A strength is the large sample size (N = 425). They reported on autonomous and controlled motivations in relation to personal goals in undergraduates. Depressive symptoms were significantly

negatively correlated with autonomous motivation, although the effect size was small. They also found that depressive symptoms were significantly positively correlated with controlled motivation, which was a medium effect size and therefore more noteworthy. They also found that action crises severity acted as a mediator between controlled motivation and depression. Participants who were higher in autonomous goals, experienced fewer action crises (or intrapsychic conflict) and this was associated with less depressive symptoms. This study is important in terms of being one of the few that examined a possible mechanism for how particular goal motives are associated with depressive symptoms. Theoretically this is important as SDT states that there is a direct relationship between fulfilment of need for autonomy and well-being and this research indicates that motives may be associated with decisional conflict that leads to depression. With regard to the review question, this study found depressive symptoms to be significantly negatively correlated with autonomous motivation and significantly positively correlated with controlled motivation. The effect size for the latter relationship was medium and therefore demonstrates a robust relationship. The study was deemed to be of moderate quality when assessed using quality rating tools and subsequently holds weight with regard to answering the review question.

Discussion

Within the six studies, three found that depressive symptoms were negatively significantly associated with autonomous motivation and one found a significantly negative association between depressive symptoms and

intrinsic motivation, which is a form of autonomous motivation. These findings are consistent with SDT and highlight the importance of needs being met by autonomous goal pursuit. One found depressive symptoms to be positively significantly associated with autonomous motivation, although they did not report effect sizes and their measures were not valid. Winch et al. (2015) examined whether motives were uniquely associated with depressive symptoms versus anxiety and found depressive symptoms to be uniquely related with reduced intrinsic motivation for approach goals, although this was found in females only. Although the designs used were a weakness and the effect sizes reported were small to medium, there is evidence to suggest that pursing goals for autonomous or intrinsic motives may be related to fewer experiences of depressive symptoms. Two studies reported depressive symptoms to be significantly positively associated with controlled motives for goal pursuit and one reported depression to be positively significantly associated with external and introjected motives which are both forms of controlled motives, suggesting a potential association between controlled motives for goal pursuit and experiencing an increase in depressive symptoms. Generally some consistency has been identified within the studies reviewed in reported associations between high autonomous motivation for goal pursuit and reduced depressive symptoms and conversely high controlled motivation and increased depressive symptoms. Although effect sizes reported were small to medium, statistical power may not have been sufficient to find significant relationships within the studies reviewed, even if there was a real effect.

Moderators

Interestingly, although few papers were revealed within this search, four of them were concerned with cultural differences. Ong and Phinney (2002) found autonomous motives for goals mediated the association between culture and depression suggesting that that the motives held for goal pursuit are more important in explaining depression than ethnicity. Scott et al. (2008) found that in a collectivist culture such as Native American tribes, self-orientated (autonomous) goals were associated with an increase in depressive symptoms, however Tyser et al. (2014) used the same measures as Scott et al. (2008) with the same population but found that autonomous goals were negatively associated with depressive symptoms. This adds further support to the criticism of Scott et al. (2008) using a novel measure, which may not be measuring the construct it intended. Future studies could examine the same population using a psychometrically improved measure. Yi et al. (2014) found that holding personally autonomous reasons for goal pursuit predicts well-being cross-culturally whereas relationally autonomous reasons for goal pursuit seemed related to collectivist cultural communities. This highlights that culture could be a moderator, as importance of autonomy is often placed within western cultures. However, SDT is thought to be a universal theory and there is some evidence within this review that it is supported even in collectivist cultures, although further research is needed in this area.

Mediators

Two of the studies looked at mechanisms that may explain why motives are related to depressive symptoms. One identified that action crises (decisional conflict) severity mediated the relationship between controlled motivation and depression. That is that, controlled motivation was significantly associated with depression but when action crises was introduced to the model, the relationship between motives and depression became insignificant suggesting that action crises is a potential mechanism that mediates the relationship between controlled motives and depressive symptoms. This is inline with Emmons and King (1988) findings that conflict is associated with reduced psychological well-being (Emmons & King, 1988). People that have more conflicting goals have been found to report greater negative affect and psychological distress compared to people with facilitating goals (Boudreaux & Ozer, 2013). This study adds value to current goal motivation research as it contributes to understanding the possible underlying mechanisms explaining the relationship, however mediation is not definitive, an alternative explanation could be that depressive symptoms lead people to follow goals for controlled motives.

Limitations

Evidence points to a relatively consistent association between autonomous goal pursuit and reduced depressive symptomology and vice versa, however, the design of the studies reported on for this review mean that causation cannot be inferred. Clinical interview would be an alternative way of obtained the information, but this would be both timely and costly and

unrealistic if larger sample sizes are recruited. However, measures of self-reports of depression may also be correlated with other measures of psychopathology, such as anxiety (Vredenburg, Flett, & Krames, 1993). Few studies controlled for other variables which may explain the relationship between motivation and depressive symptoms, such as neuroticism or conscientiousness. The lack of longitudinal and experimental evidence means that it is unclear whether there is a causal relationship between motives and depressive symptoms. There could be a third factor that explains why they are correlated, these studies may not have examined confounding variables that may explain the association between motives and depressive symptoms. Even though the review question was not about causal relationships, this is an important thing to consider, especially in terms of clinical interventions. Longitudinal studies would be a priority as you can retain the ecological validity that you may lose with more experimental designs.

Using a predominantly student cohort to assess depressive symptomology may not be generalisable to a clinical population, as this population may not have experienced some of the antecedents and stressors that can culminate in experience of depression (Coyne, 1994). Within a clinical population the relationship between the focal variables may differ, as previously mentioned, depression is associated with motivational deficits. All measures within these studies were self-report, which can be vulnerable to response bias due to social desirability (Van de Mortel, 2008), it is therefore advised that findings are taken with caution. Another limitation is that in these studies it is not clear to which the associations that goal motives have with

depressive symptoms are also shared with other symptoms. We do not know how much is specific to depression. Therefore, in light of the limitations of the studies reviewed, the relationship between motives and depressive symptoms remains unclear.

Conclusions

Understanding whether there a relationship between intrinsic/autonomous and/or controlled motivation for personal goals and depressive symptoms is an important area to review. Projecting towards one's future aspirations is a process that is thought to start early in adolescence (Nurmi, 1991) and research has identified that depressive symptoms are experienced during this developmental stage that person is vulnerable to experiencing psychopathology in the future (Fergusson & Woodward, 2002). These papers have identified a relatively consistent negative association between autonomous motives and depressive symptoms and positive associations between controlled motivations and depressive symptomology. Understanding more about the associations between motivation and symptoms is important for the future development of interventions and working with people experiencing mental health difficulties. However, correlations with depressive symptoms may differ from correlations with well-being. Many therapeutic approaches incorporate the use of goals such as cognitive behavioural therapy (Simos, 2008) and acceptance and commitment therapy (Harris, 2009). Interventions can be implemented to aid clients to develop autonomous motivations for goals as opposed to pursuing goals for motives that are controlled. However, the caveat is added that we do not know much about causality and this area warrants further research.

The findings of this review do hold some support for SDT, although, SDT research is mainly about well-being rather than depressive symptoms. This is an area that warrants further investigation. Clinicians should be aware of the reasons why clients are pursuing goals as well as what they are pursuing (e.g., even approach goals may have low autonomous motives and high controlled motives).

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Appendices

Appendix A. Prisma Checklist

Section/Topic	#	Checklist Item	Reported on Page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome-level assessment (see Item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., health care providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

doi:10.1371/journal.pmed.1000097.t001

Appendix B. Critical Appraisal Skills Checklist: Case Control Study

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CASP Checklist: 11 questions to help you make sense of a Case Control Study

How to use this appraisal tool: Three broad issues need to be considered when appraising a case control study:

- Are the results of the study valid? (Section A)
- What are the results? (Section B)
- Will the results help locally? (Section C)

The 11 questions on the following pages are designed to help you think about these issues systematically. The first three questions are screening questions and can be answered quickly. If the answer to both is "yes", it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a "yes", "no" or "can't tell" to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA 'Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Case Control Study) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

CASP
Critical Appraisal Skills Programme

Section A: Are the results of the trial valid?

1. Did the study address a clearly focused issue?

Yes	
Can't Tell	
No	

HINT: An issue can be 'focused' In terms of
- the population studied
- Whether the study tried to detect a beneficial or harmful effect
- the risk factors studied

Comments:

2. Did the authors use an appropriate method to answer their question?

Yes	
Can't Tell	
No	

HINT: Consider
- Is a case control study an appropriate way of answering the question under the circumstances
- Did it address the study question

Comments:

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Is it worth continuing?

3. Were the cases recruited in an acceptable way?

Yes	
Can't Tell	
No	

Comments:

HINT: We are looking for selection bias which might compromise validity of the findings

- are the cases defined precisely
- were the cases representative of a defined population (geographically and/or temporally)

 was there an established reliable system for selecting all the cases
 are they incident or prevalent
 is there something special about the cases
 is the time frame of the study relevant to disease/exposure
 was there a sufficient number of cases selected
 was there a power calculation

4. Were the controls selected in an acceptable way?

Yes	
Can't Tell	
No	

Comments:

HINT: We are looking for selection bias which might compromise the generalisability of the findings

- were the controls representative of the defined population (geographically and/or temporally)

 was there something special about the controls
 was the non-response high, could non-respondents be different in any way
 are they matched, population based or randomly selected
 was there a sufficient number of controls selected

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5. Was the exposure accurately measured to minimise bias?

Yes	
Can't Tell	
No	

HINT: We are looking for measurement, recall or classification bias

- was the exposure clearly defined and accurately measured
- did the authors use subjective or objective measurements
- do the measures truly reflect what they are supposed to measure (have they been validated)
- were the measurement methods similar in the cases and controls
- did the study incorporate blinding where feasible
- is the temporal relation correct (does the exposure of interest precede the outcome)

Comments:

6. (a) Aside from the experimental intervention, were the groups treated equally?

HINT: List the ones you think might be important, that the author may have missed

- genetic
- environmental
- socio-economic

List:

6. (b) Have the authors taken account of the potential confounding factors in the design and/or in their analysis?

Yes	
Can't Tell	
No	

HINT: Look for

- restriction in design, and techniques e.g. modelling, stratified-, regression-, or sensitivity analysis to correct, control or adjust for confounding factors

Comments:

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Section B: What are the results?

7. How large was the treatment effect?

HINT: Consider
- what are the bottom line results
- is the analysis appropriate to the design
- how strong is the association between exposure and outcome (look at the odds ratio)
- are the results adjusted for confounding, and might confounding still explain the association
- has adjustment made a big difference to the OR

Comments:

8. How precise was the estimate of the treatment effect?

HINT: Consider
- size of the p-value
- size of the confidence intervals
- have the authors considered all the important variables
- how was the effect of subjects refusing to participate evaluated

Comments:

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9. Do you believe the results?

Yes ☐
No ☐

HINT: Consider
- big effect is hard to ignore!
- Can it be due to chance, bias, or confounding
- are the design and methods of this study sufficiently flawed to make the results unreliable
- consider Bradford Hills criteria (e.g. time sequence, does-response gradient, strength, biological plausibility)

Comments:

Section C: Will the results help locally?

10. Can the results be applied to the local population?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider whether
- the subjects covered in the study could be sufficiently different from your population to cause concern
- your local setting is likely to differ much from that of the study
- can you quantify the local benefits and harms

Comments:

11. Do the results of this study fit with other available evidence?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- all the available evidence from RCT's Systematic Reviews, Cohort Studies, and Case Control Studies as well, for consistency

Comments:

Remember One observational study rarely provides sufficiently robust evidence to recommend changes to clinical practice or within health policy decision making. However, for certain questions observational studies provide the only evidence. Recommendations from observational studies are always stronger when supported by other evidence.

Appendix C. Critical Appraisal Skills Checklist: Cohort Study Checklist

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Summertown Pavilion, Middle Way Oxford OX2 7LG

CASP Checklist: 12 questions to help you make sense of a Cohort Study

How to use this appraisal tool: Three broad issues need to be considered when appraising a cohort study:

- Are the results of the study valid? (Section A)
- What are the results? (Section B)
- Will the results help locally? (Section C)

The 12 questions on the following pages are designed to help you think about these issues systematically. The first two questions are screening questions and can be answered quickly. If the answer to both is "yes", it is worth proceeding with the remaining questions. There is some degree of overlap between the questions, you are asked to record a "yes", "no" or "can't tell" to most of the questions. A number of italicised prompts are given after each question. These are designed to remind you why the question is important. Record your reasons for your answers in the spaces provided.

About: These checklists were designed to be used as educational pedagogic tools, as part of a workshop setting, therefore we do not suggest a scoring system. The core CASP checklists (randomised controlled trial & systematic review) were based on JAMA 'Users' guides to the medical literature 1994 (adapted from Guyatt GH, Sackett DL, and Cook DJ), and piloted with health care practitioners.

For each new checklist, a group of experts were assembled to develop and pilot the checklist and the workshop format with which it would be used. Over the years overall adjustments have been made to the format, but a recent survey of checklist users reiterated that the basic format continues to be useful and appropriate.

Referencing: we recommend using the Harvard style citation, i.e.: *Critical Appraisal Skills Programme (2018). CASP (insert name of checklist i.e. Cohort Study) Checklist. [online] Available at: URL. Accessed: Date Accessed.*

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Section A: Are the results of the study valid?

1. Did the study address a clearly focused issue?

Yes	
Can't Tell	
No	

HINT: A question can be 'focused' in terms of
- the population studied
- the risk factors studied
- is it clear whether the study tried to detect a beneficial or harmful effect
- the outcomes considered

Comments:

2. Was the cohort recruited in an acceptable way?

Yes	
Can't Tell	
No	

HINT: Look for selection bias which might compromise the generalisability of the findings:
- was the cohort representative of a defined population
- was there something special about the cohort
- was everybody included who should have been

Comments:

Is it worth continuing?

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3. Was the exposure accurately measured to minimise bias?

Yes	
Can't Tell	
No	

HINT: Look for measurement or classification bias:

- did they use subjective or objective measurements
- do the measurements truly reflect what you want them to (have they been validated)
- were all the subjects classified into exposure groups using the same procedure

Comments:

4. Was the outcome accurately measured to minimise bias?

Yes	
Can't Tell	
No	

HINT: Look for measurement or classification bias:

- did they use subjective or objective measurements
- do the measurements truly reflect what you want them to (have they been validated)
- has a reliable system been established for detecting all the cases (for measuring disease occurrence)
- were the measurement methods similar in the different groups
- were the subjects and/or the outcome assessor blinded to exposure (does this matter)

Comments:

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5. (a) Have the authors identified all important confounding factors?

Yes ☐
Can't Tell ☐
No ☐

HINT:
- list the ones you think might be important, and ones the author missed

Comments:

5. (b) Have they taken account of the confounding factors in the design and/or analysis?

Yes ☐
Can't Tell ☐
No ☐

HINT:
- look for restriction in design, and techniques e.g. modelling, stratified-, regression-, or sensitivity analysis to correct, control or adjust for confounding factors

Comments:

6. (a) Was the follow up of subjects complete enough?

Yes ☐
Can't Tell ☐
No ☐

HINT: Consider
- the good or bad effects should have had long enough to reveal themselves
- the persons that are lost to follow-up may have different outcomes than those available for assessment
- in an open or dynamic cohort, was there anything special about the outcome of the people leaving, or the exposure of the people entering the cohort

6. (b) Was the follow up of subjects complete enough?

Yes ☐
Can't Tell ☐
No ☐

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Comments:

Section B: What are the results?

7. What are the results of this study?

HINT: Consider
- what are the bottom line results
- have they reported the rate or the proportion between the exposed/unexposed, the ratio/rate difference
- how strong is the association between exposure and outcome (RR)
- what is the absolute risk reduction (ARR)

Comments:

8. How precise are the results?

HINT:
- look for the range of the confidence intervals, if given

Comments:

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9. Do you believe the results?

Yes	
Can't Tell	
No	

HINT: Consider
- big effect is hard to ignore
- can it be due to bias, chance or confounding
- are the design and methods of this study sufficiently flawed to make the results unreliable
- Bradford Hills criteria (e.g. time sequence, dose-response gradient, biological plausibility, consistency)

Comments:

Section C: Will the results help locally?

10. Can the results be applied to the local population?

Yes	
Can't Tell	
No	

HINT: Consider whether
- a cohort study was the appropriate method to answer this question
- the subjects covered in this study could be sufficiently different from your population to cause concern
- your local setting is likely to differ much from that of the study
- you can quantify the local benefits and harms

Comments:

11. Do the results of this study fit with other available evidence?

Yes	
Can't Tell	
No	

Comments:

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12. What are the implications of this study for practice?

Yes	
Can't Tell	
No	

HINT: Consider

- one observational study rarely provides sufficiently robust evidence to recommend changes to clinical practice or within health policy decision making
- for certain questions, observational studies provide the only evidence
- recommendations from observational studies are always stronger when supported by other evidence

Appendix D. The Effective Public Health Practice Project (EPHPP) Tool for Quantitative Studies

A) Selection Bias

Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

Q2) What percentage of selected individuals agreed to participate?

1. 80 - 100% agreement
2. 60 – 79% agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

B) Study Design

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before and after))
6. Interrupted time series
7. Other specify _____
8. Can't tell

Was the study described as randomized? Yes/No. If NO, go to Component C.
If Yes, was the method of randomization described? Yes/No
If Yes, was the method appropriate? Yes/No

C) Confounders

Q1) Were there important differences between groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex

3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't Tell

D) Blinding

Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

1. Yes
2. No
3. Can't tell

Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

E) Data Collection Methods

Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

Q2) Were data collection tools shown to be reliable?

1. Yes
2. No
3. Can't tell

F) Withdrawals and Drop-outs

Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

Q2) Indicate the percentage of participants completing the study (If the percentage differs by groups, record the lowest)

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. retrospective case-control)

Appendix E. Clinical Psychology Review - Instructions for Authors

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SCHOOL OF PSYCHOLOGY

DOCTORATE IN CLINICAL PSYCHOLOGY

EMPIRICAL PAPER

Investigating How Different Motives for Goal Pursuit Predicts Rumination About Those Goals Using a Diary Design

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Target Journal: Motivation and Emotion

Word Count: 7776

Submitted in partial fulfillment of requirements for the Doctorate Degree in Clinical Psychology, University of Exeter

Abstract

Background: Motivational theories suggest that goals that are more internalised are associated with increased progress and well-being and that when goals are less internalised less progress is made. Rumination can occur as a result of unresolved goals and the nature of the goals that people set may be a factor in the degree to which they ruminate. Rumination has been associated with ill-being when it in unconstructive.

Objective: The purpose of this study was to test whether different motives for goal pursuit predict unique variance in rumination, after accounting for other possible variables (goal importance, goal expectancy, goal conflict and goal facilitation) that may explain that relationship. Further investigation aimed to identify whether rumination about goals is perceived to be constructive, whether intrinsic and identified motives predict higher levels of goal progress and whether introjected motives and goal conflict each contribute significant variance in perceived constructiveness of rumination.

Methods*:* This is a correlational diary study investigating goal rumination, constructiveness of goal rumination and goal progress on a daily basis. Forty-eight participants took part in the study (83.3% female [*n*=48]; age, *M* = 18.93 years, range = 18-43, *SD* = 7.72). Participants completed initial self-report measures on personal goals (Emmons, 1986), goal motivation (Ryan & Connell, 1989), goal importance and expectancy (Emmons, 1986), goal conflict and facilitation using unipolar scales (Riediger & Freund, 2004). They were then asked to complete a ten-day diary phase relating to their 6 most

important goals. This included reporting on rumination (Schultheiss, Jones, Davis, & Kley, 2008), constructiveness of rumination and goal progress (Moberly & Dickson, 2016).

Results*:* Support was found at the within-person level for introjected motives for goal pursuit being associated with higher levels of goal rumination and participants reported higher levels of rumination about goals that conflicted with other goals, both predicted unique variance. Introjected motives for goal pursuits were associated with higher levels of perceived constructiveness of rumination at the within-person level but not at the between-person level. Intrinsic and identified motives were not found to be associated with high levels of goal progress.

Conclusion: This study was able to advance methodologically on previous studies finding that people ruminate more about goals pursued for introjected motives. Findings suggest introjected motives are associated with rumination and that this is not because of correlations with other variables such as conflict. This is support for the organismic integration understanding of rumination.

Introduction

Rumination

Rumination research often focuses on the conceptualised contextualisation known as depressive rumination (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). This is when an individual responds to a sad or depressed mood by repetitively thinking about the causes, consequences and meanings of this mood. Rumination has been found to predict exacerbation of depression (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

A broad definition of rumination does not restrict this thinking style to what occurs during a sad mood, but instead describes rumination as a style of thinking that is repetitive, intrusive and to some extent experienced as uncontrollable, i.e., focuses on the process rather than the content. For example, Martin and Tesser (1996) define rumination as "a class of conscious thoughts that revolve around a common instrumental theme and that recur in the absence of immediate environmental demands requiring the thoughts" (p. 1).

Goal Progress

The goal progress theory of rumination (Martin & Tesser, 1996) postulates that rumination can be triggered by discrepancies on goal progress. Supporting this, Moberly and Watkins (2010) found that people ruminated more in everyday life when reporting lower success on goals. This wider definition does not reduce rumination to negative thinking; it could be positive or neutral. Watkins (2008) argues that these two definitions are not mutually exclusive but that depressive rumination can be thought of as one form within Martin and Tesser's (1996) broader definition. He suggested that

depressive rumination is an unconstructive type of rumination that occurs for an individual when there is a negative mood context and when the thinking style is abstract. When a person is depressed, this type of rumination can exacerbate low mood and does not help to resolve goal discrepancies as people with depression who ruminate tend to do so at a very abstract level rather than in a problem solving way (Watkins, 2008). Conflict can instigate rumination but when there is no solution, the rumination is perceived as unconstructive. However, ruminative thought can be considered to be adaptive. Constructiveness depends on whether rumination helps to reduce or maintain goal discrepancies (Watkins, 2008). Given that rumination is theorised to be a response to goal discrepancies, this study aims to investigate whether particular characteristics of goals are more likely to predict rumination. One characteristic that relates rumination to goals is the motive for pursuing goals.

Goal Motives

Self-Determination Theory (SDT; Deci & Ryan, 1985) is a theory of motivation that focuses on the degree to which a person or behaviour is self-motivated and self-determined. The theory states that there are three psychological needs that when satisfied leads to well-being; autonomy, competence, and relatedness. Organismic Integration Theory (Ryan & Deci, 2000) is theoretically descended from Deci and Ryan's (1985) self-determination theory and relates to the extent to which a person's goals are perceived to originate from the authentic self (satisfying the need for autonomy) rather than being externally driven. It is thought that there are

consequences to well-being in relation to different types of motivation for goal pursuit (Sheldon, Ryan, Deci, & Kasser, 2004).

Ryan and Connell (1989) identified four categories of reasons why individuals pursue goals. These are: external (because somebody else wants you to, or you will get something from somebody if you do), introjected (because you would feel guilt or shame if you didn't), identified (because you believe it is an important goal to have) and intrinsic (because this goal will provide you with enjoyment or fun). Goals pursued for intrinsic or identified motives are autonomous regulatory modes, which means that goals pursued for these reasons are more internalized within the individual. External and introjected motives are controlled regulatory modes, which means that goals pursued for these reasons are less internalized (Deci & Ryan, 1985). Ryan and Deci (2000) claim that if the motive held for pursuing the goal is internalized (autonomous) this enables an individual to be self-determined. Sheldon and Elliot (1998) found that autonomous motives result in more goal-directed effort and subsequently more attainment than controlled motives.

Self-determination theory is a general theory of optimal human functioning and well-being, whereas rumination has been implicated in particular facets of ill-being, so there is some reason to examine whether rumination can be understood in SDT terms. Furthermore, both the goal progress theory of motivation and SDT have been theoretically linked to goal motivation (or problems therein). Rumination is explained in terms of unresolved goals and the nature of the goals that people set may be a factor in the degree to which they ruminate, so it is reasonable to investigate whether a theory relating to why people pursue goals can explain the extent to

which people ruminate. Research in this area has investigated whether rumination about goals is associated with the self-determination of the reasons that people have for pursuing them.

Thomsen, Tonnesvang, Schnieber and Olesen (2011) found evidence that rumination about goals is associated with introjected motives at both the between and within participant level. They found that people who held more introjected motives (i.e., pursued goals to avoid negative emotions) tended to ruminate more about their goals in general and that people tended to ruminate more about their goals that they pursued for more introjected reasons. Perspectives based on SDT suggest that people ruminate about less autonomous goals simply because those goals are less integrated to the self (Thomsen et al., 2011). These non-integrated goals may cause more conflict and instigate higher levels of repetitive thought.

In a subsequent study, Moberly and Dickson (2016) found that introjected motives for goals were associated with higher levels of goal rumination reported retrospectively one month later, both at the within- and between-person level, this was not explained by low levels of progress. This supported the idea that people do not simply ruminate about goals they pursue for introjected motives because they make less progress on them. Moberly and Dickson (2016) found that introjected motives are unrelated to progress so we do not know why people ruminate more about goals pursued for introjected reasons.

One thing that differentiates introjected motives from external motives is that in the case of introjected motives there is avoidance, namely of negative emotions. External motives involve someone pursuing a goal

because they get something for it, e.g., working for money, so avoidance is not necessary. Introjected motives involve doing something to avoid feeling guilt or anxiety. Rumination is often considered a form of avoidance because it is abstract and prevents processing of upsetting emotional details (Giorgio, Sanflippo, Kleiman, Reilly, Bender, Wagner, Liu, & Alloy, 2010; Moulds, Kandris, Starr, & Wong, 2007). Although previous research has not found a reason or mechanism why people ruminate more about introjected goals (Moberly & Dickson, 2016; Thomsen et al., 2011), avoidance may explain why introjected motives for a goal may be associated with more rumination. The next sections will consider other variables that may explain why motives are associated with rumination, which the present research will try to take into account.

Possible Covariates that Explain the Relationship between Goal Motives and Rumination

Goal Conflict

People are more inclined to ruminate about goals that conflict with other goals (Emmons & King, 1988). People hold several goals at any one time (Riediger & Freund, 2008) and it is known that independent goals can impact on each other in positive (facilitating) or negative (interfering) ways (Emmons & King, 1988). Conflicting goals are when one goal hinders the pursuit of another goal, either because they are inherently incompatible or because they compete for the same resource, e.g., a student has the goal to study in order to pass exams, which may conflict with their goal to spend more time with friends. Facilitation is considered to occur when a goal helps the pursuit of another goal, e.g., a person has the goal to get fitter which

facilitates their goal to socialize more through joining a fitness class. Riediger and Freund (2004) differentiated inter-goal conflict from inter-goal facilitation stating these are independent of each other, so rather than being opposite ends on the same construct, they are associated with different outcomes. Emmons and King (1988) found that conflict on personal goals was associated with poorer physical and emotional well-being, although this study did not use separate conflict and facilitation measures, but used a bipolar scale. In addition, even though conflict was associated with greater rumination about their conflicted goal, this was not associated with goal progress. Boudreaux and Ozer (2013) found that goal conflict did not impact on progress but persons with conflicting goals were more likely to experience psychological distress as a result of pursuing conflicting goals. One explanation may be that people ruminate about introjected goals because they experience more conflict about these goals, which can consequently lead to distress, however, both introjected motives and conflict seem to be associated with goal rumination. Thomsen et al. (2011) found that conflict did not explain why people ruminated more about non-self-determined goals, but it is important to consider this in future studies.

Emmons and King (1988) postulated that introjected motives may be associated with greater within-striving conflict or ambivalence. Ambivalence is when a person has conflicting feelings about the benefits of pursuing a particular goal, e.g., when a person is pursuing a goal that they know may not bring them happiness. If goals are pursued to avoid negative feelings rather than for intrinsic reasons, this could explain why people ruminate more. If someone is pursuing something for the reason of avoiding negative emotions

(introjected regulation), that goal may be less integrated into their other goals and may cause more conflict. However, contrary to predictions, conflict and ambivalence did not explain why people ruminated more about goals for introjected reasons (Thomsen et al., 2011). Nevertheless, in this study, conflict between goals will be investigated as a possible alternative explanation for rumination about goals.

Goal Importance

The goal progress theory of rumination (Martin & Tesser, 1996) states that people are more likely to ruminate about goals that they consider to be more important, so in line with other research (Moberly & Dickson, 2016), importance will be considered as a covariate when investigating whether motives predict rumination about goals. Goal importance will therefore be included as a covariate within this study

Goal Expectancy

Another aspect of goal pursuit that may be linked with rumination about goals is people's expectancies about attaining the goal. Carver and Scheier (1998) proposed that if a person has low expectancies they are likely to have reduced effort toward pursuing that goal. Depressed individuals may have lower expectancies for attaining their goals despite viewing them as important (Dickson, Moberly, & Kinderman, 2011), e.g., depressed people see their goals as important but have low expectancies, therefore they stay engaged and perceive less progress, therefore ruminate more about the goal (Martin & Tesser, 1996). This could increase the likelihood of rumination due to a perception of poor progress. More generally, if people have low expectancies about attaining goals pursued for introjected motives, this may explain why

people ruminate more about these goals. Goal expectancy will therefore be included as a covariate within this study

Rationale for the current study

This study aims to identify whether different motives for goal pursuit predict unique variance in rumination and progress on those goals as reported during everyday life using a daily diary design, and whether this is independent of other goal characteristics (e.g., importance, expectancy, conflict and facilitation) that may explain that relationship. Further investigation aims to identify whether goal rumination is perceived to be constructive for reducing goal discrepancies that are pursued for particular motives, independent of other goal characteristics.

The theoretical rationale for this study is to provide information on the mechanism explaining why the introjected motive tends to be associated more closely with rumination, independent of other motives. This study considers a number of possible variables that may help to understand why people ruminate more about goals pursued for introjected reasons. Further to this and replicating past research, it is hypothesized that intrinsic and identified motives will be positively associated with goal progress (Sheldon, & Elliot, 1999). This study aims to test whether introjected motives and conflict predict independent variance in rumination about goals (Figure 1.). Both introjected motives and rumination are each expected to contribute significant variance in rumination even though conflict overlaps with introjected motives, controlling for importance and expectancy as these variables may be associated with rumination and goal motives.

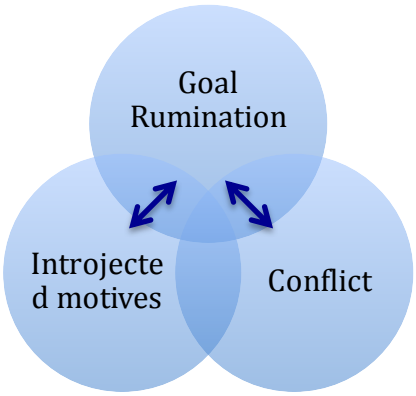

Figure 1. Schematic model depicting predictors of rumination

Understanding more about the triggers for rumination can in turn provide a framework to develop interventions to improve goal attainment strategies and effective self-regulation. Sheldon and Houser-Marko (2001) argue that goal attainment leads to increased well-being, which in turn can lead to better attainment so there is justification for capitalizing on this positive spiral. If we know what makes people ruminate unproductively about their goals, that might indicate inefficiency in goal pursuit that can be addressed through interventions that focus people on more self-concordant goal pursuit such as MacLeod, Coates, and Hetherton's (2008) goal setting and planning skills (GAP) intervention.

Furthermore, this study aims to investigate the constructiveness of rumination as Watkins (2008) reported that repetitive thinking can be both constructive and unconstructive. This study aims to understand more about the perceived constructiveness of rumination in relation to motives for goal pursuit. Goals pursued for certain motives may predict greater rumination but not progress (Moberly & Dickson, 2016) because the rumination that they

instigate is perceived as less constructive and therefore less likely to self-terminate.

Thomsen et al. (2011) found that people reported that they ruminate more about goals pursued for introjected motives, however these findings were cross sectional, using trait and adapted state versions of the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). Moberly and Dickson (2016) looked at rumination in relation to goal motives by asking participants one month later how much they had ruminated about their goal. This has some methodological weakness as retrospective bias may result in erroneous conclusions. For example, people may be more biased to say that they ruminated if they are currently feeling more negative. One rationale for this study is to advance methodologically beyond what has been done already by having better measures of goal rumination that are collected during the period of interest rather than having people think back retrospectively. Using a diary method holds more ecological validity and is an effective way of getting closer to the phenomena that is being measured (Bolger, Davis, & Rafaeli, 2003).

Hypotheses:

H1a. Goal conflict (but not facilitation) will be associated with higher levels of goal rumination, controlling for importance and expectancy.

H1b. Introjected (but not intrinsic, identified, or external) motives for goal pursuit will be associated with higher levels of goal rumination, controlling for goal conflict, facilitation, importance and expectancy.

H2a. Goal conflict (but not facilitation) will be associated with lower levels of perceived constructiveness of goal rumination, controlling for importance and expectancy.

H2b. Introjected (but not intrinsic, identified, or external) motives for goal pursuit will be associated with higher levels of perceived constructiveness of goal rumination, controlling for goal importance, expectancy, conflict and facilitation.

H3a. Goal conflict (and facilitation) will be associated with lower (higher) levels of goal progress, controlling for importance and expectancy.

H3b. Intrinsic and identified motives (but not introjected or external motives) will be associated with higher levels of goal progress, controlling for importance, expectancy, goal conflict and goal facilitation.

All hypothesised relationships are expected to be found at both the within and between-subject level, i.e., there is no reason to expect why within-person processes differ from between-person processes.

Method

Participants were invited to take part in this study via posters placed within the University of Exeter and in the community. They attended in person to complete the initial phase. They were asked to write a list of ten personal strivings and to choose six based on which they felt were the most important. They then completed measures on goal motives, importance, expectancy, conflict and facilitation. The second phase was completed online. Participants were requested to respond daily for ten days, reporting on progress, rumination and constructiveness of that rumination.

Participants

Sixty-nine participants (56 female, 13 male) were initially recruited and consented to take part in the study. Inclusion criteria for this study required participants to be native English speakers and at least 18 years of age. Fourteen participants were subsequently excluded due to insufficient data provided for goal motives at the initial questionnaire stage. Seven participants were excluded due to insufficient diary entries. Participants that were excluded did not vary from the included participants regarding age and gender (76.2% female [*n*=21]; age, *M* = 21, range 18-44, *SD* = 6.88). Forty-eight participants completed the study (83.3% female [*n* = 48]; age, *M* = 18.93 years, range = 18-43, *SD* = 7.72). Students were provided with course credits upon completion and all participants were offered the choice to enter a prize draw.

Design

This was a correlational diary study investigating goal rumination, constructiveness of goal rumination and goal progress on a daily basis. Predictor variables were goal importance, expectancy, conflict, facilitation and intrinsic, identified, introjected and external motives for goal pursuit.

Measures

Initial session

Participants were invited to attend a group session lasting approximately one hour. During this time informed consent was obtained and an initial questionnaire including the following measures was completed (see Appendix A).

Personal goal strivings (Emmons, 1986). Participants were asked to list ten personal approach goal strivings that were personally important and meaningful. It was explained that approach goals involve achieving or maintaining a positive outcome (Elliot, 2006). Goals were defined as "*things that you typically or characteristically are trying to do*", and participants were asked to complete the stem: "*I typically try to*…" Examples were provided. Consistent with previous research (Emmons, 1986), participants reported ten goals to provide sufficient within-person variability. Emmons (1986) found personal goal strivings remained relatively stable over one month. Participants were then asked to choose their six most important goals for the diary stage. These were then used for the rest of the study.

Goal Motives (Ryan & Connell, 1989). Quality of motivation for each goal was assessed using four questions, each addressing a reason for pursuit at a different locus on the continuum of self-determination (Ryan & Connell, 1989). The responses were recorded on a 6-point Likert scale anchored by 0 (*not at all*) and 5 (*extremely*). The questions were as follows:

(i) "*To what extent do you strive for this purely because of the fun and enjoyment that it provides,"* (intrinsic motivation); (ii) "*To what extent do you strive for this because you really believe that it's an important goal to have"* (identified regulation); (iii) "*To what extent do you strive for this because you would feel ashamed, guilty, or anxious if you didn't"* (introjected regulation); and (iv) "*To what extent do you strive for this because somebody else wants you to or thinks you ought to, or because you'll get something from somebody if you do?*" (external regulation). This method has face validity and single item scales have been used in past research (Moberly & Dickson, 2016). The

motives provided were analysed separately as previous research suggests they have independent associations with rumination (Thomsen et al., 2011).

Goal importance (Emmons, 1986). Goal importance was assessed using a single item: "*How important is this striving to your life, i.e., how committed are you to working toward this striving?*" Importance ratings were made on a 6-point Likert scale anchored by 0 (*not at all*) and 5 (*extremely*).

Goal expectancy (Emmons, 1986). Goal expectancy was assessed using a single item: "*In the next month, how successful do you think you will be in this striving?"* expectancy ratings were made on a 6-point Likert scale anchored by 0 (*not at all*) and 5 (*extremely*). Emmons (1986) found high test-retest reliabilities over one month using similar measures of goal importance and expectancy.

Goal conflict and goal facilitation (Riediger & Freund, 2004). Participants were first asked to rate whether goals conflict with each other by filling in the cells of a matrix with goals listed in the rows and columns: "Please rate the level of conflict between your strivings by rating the extent to which your strivings (1-6) conflict with each other". This was repeated for the extent to which goals (1-6) facilitate other goals using another matrix. Ratings were made on a 6-point Likert scale: 0 (*not at all*), 1 (*slightly),* 2 (*somewhat)* 3 *(moderately),* 4 (*very*) and 5 (*extremely*).

Diary Measures were completed online in relation to each of the six most important goals identified at the initial session. These were completed every day over a 10 day period.

Goal rumination scale (Schultheiss et al., 2008). Participants' daily rumination regarding how frequently they thought about their goals and

whether that thinking was intrusive, was measured on a 7-item scale using a 6 point Likert scale anchored by 1 (*not at all*) and 7 (*extremely*). Schultheiss et al. (2008) report a Cronbach alpha of .87 for the goal rumination measure which suggests this is a reliable measure.

Constructiveness of rumination. Participants were asked to rate their perception of the constructiveness of their daily rumination toward achieving their goals using the following question: "To what extent have you found thinking about this goal in that way helpful in the last 24 hours?" This item was measured on a 6-point scale from 0 (*not at all helpful*) to 5 (*extremely helpful*).

Goal progress (adapted from Moberly & Dickson, 2016).

Participants were asked: How much progress do you feel you have made on this goal in the last 24 hours? This item was measured on a 6-point scale from 0 (*no progress*) to 5 (*extreme progress*).

Procedure

The initial phase was administered in person, either one to one or in small groups. This session lasted approximately one hour. Participants completed informed consent and then went on to complete the goal assessment, providing personal goals and rating them on goal motives, importance, expectancy, conflict and facilitation. During this session, participants provided their preferred contact for the daily reminders for the diary phase, either by email, text or both. The second stage started on the following day. On each of the next 10 days, participants were sent a link to complete the online diary phase, which was administered at www.survey.ex.ac.uk. Data for a daily diary was to be entered between

4.30pm and 6am. For each goal, the online diary asked participants to report the rumination experienced in relation to each goal and their perceived constructiveness of rumination on that day, and their perceived progress towards goal attainment.

Analytic Strategy

A three-level multilevel model was constructed to model each of daily goal rumination, constructiveness of rumination and goal progress as a function of the goal dimensions. The multilevel modelling software package MLwiN version 2.30 was used for this. The multilevel model was necessary because daily data on goal rumination were nested within goals, while goals were nested within participants, violating the assumption of independent observations. A random intercept model was used to account for the non-independence of data deriving from the same goal, and the non-independence of data deriving from the same person. For simplicity and to avoid problems with model convergence, the slopes were not modelled as randomly varying by person. All between-person variables were centred around the grand mean and all within-person variables were centred around the person mean, so that the between- and within-person models were unconfounded. When predictors were added hierarchically to test hypotheses, the pattern of significance for previous predictors did not change unless explicitly mentioned.

Results

Diary completion

The total number of days of the online diary phase correctly recorded across participants was 410. The range of days that each participant completed the diary phase for was 5-10 (*M* = 8.54, *SD* = 1.47).

Participants were requested to complete the diary for 10 consecutive days. Some people continued responding after this time frame; any data after the 10 day period was removed. Data for a daily diary was to be entered between 4.30pm and 6am (data entered after 6am was considered a late response and counted as missed). 40 days of data across participants were lost as a result of this. If two entries were completed on the same date within the time frame of 4.30pm-6am, the latter was deleted.

Seven participants completed fewer than five diary entries and were removed from the study due to insufficient data. If fewer than 5 of the 15 questions in the daily diary were answered then that day was not included in the analysis.

Bivariate Correlations

Table 1 presents correlations among variables at the between-participant level of analysis. Goal rumination was significantly positively correlated with each of the four goal motives and with constructiveness of goal rumination. Constructiveness of goal rumination was also significantly positively correlated with goal facilitation, external goal motivation and goal progress. Goal progress was significantly positively associated with goal expectancy and external motives.

Table 1. Between-person correlations and descriptive statistics.

Variable	1	2	3	4	5	6	7	8	9	10	11	*M*	*SD*
1. Goal importance	-											3.80	0.34
2. Goal expectancy	.51**	-										3.27	0.13
3. Goal conflict	-.16	-.17	-									1.24	0.06
4. Goal facilitation	.13	.79	.32*	-								1.90	0.09
5. Intrinsic motives	.45**	.82	.97	.42**	-							2.75	0.13
6. Identified motives	.66**	.31*	.11	.12	.37**	-						3.79	0.24
7. Introjected motives	-.05	-.06	.32*	.003	.07	.26	-					2.59	0.13
8. External motives	.09	.07	.13	.09	.19	.17	.60**	-				1.95	0.30
9. Goal rumination	.11	.03	.24	.25	.39**	.36**	.49**	.58**	-			18.30	5.98
10. Constructiveness of rumination	.08	.28	.03	.31*	.06	.12	.03	.32*	.47**	-		1.94	0.83
11. Goal progress	.08	.42**	-.14	.23	.04	.05	.07	.30*	.33*	.81**	-	2.19	0.75

* p<0.05. ** p<0.01. *** p<0.001

Between-person predictors of goal rumination

Hypothesis 1 predicted that introjected motives and conflict would be associated with higher levels of goal rumination, controlling for other variables.

Mean goal importance and mean goal expectancy were added into a multilevel model predicting goal rumination as between-person predictors. Mean goal importance was not significantly associated with individual differences in goal rumination, B = 1.676, $SE(B)$ = 2.008, z = 0.83, p = .41, nor was mean goal expectancy, B = -0.440, $SE(B)$ = 2.002, z = -0.22, p = .83. These variables did not significantly improve the model fit, $\chi^2(2) = 0.76$, p = .68.

Following this, goal conflict and goal facilitation were added. Not supporting the hypothesis, mean goal conflict was not significantly associated with individual differences in goal rumination, B = 1.797, $SE(B)$ = 1.245, z =

1.44, p = .15, nor was mean levels of goal facilitation, B = 0.953, $SE(B)$ = 0.969, z = 0.98, p = .33. Goal conflict and goal facilitation did not significantly improve the model fit, $\chi^2(2) = 4.40$, p = .11.

Next, the four motives for goals were added. Counter to the hypothesis, mean levels of goal rumination were significantly associated with external motives, B = 2.412, $SE(B)$ = 0.718, z = 3.36, p <.001, but not with identified motives, B = 3.171, $SE(B)$ = 1.389, z = 2.28, p =.02, introjected motives, B = 0.303, $SE(B)$ = 0.786, z = 0.39, p = .70 or goals pursued for more intrinsic motives, B = 1.525, $SE(B)$ = 0.924, z = 1.65, p =.10. Inclusion of the four goal motives significantly improved the model fit compared to the previous model, $\chi^2(4) = 28.63$, p < .001.

In summary, counter to hypotheses 1a and 1b, external regulation was the only variable to predict individual differences in goal rumination.

Within-person predictors of goal rumination

In the next step, goal importance and goal expectancy were added as predictors to control for these variables at the within-person level. Participants reported significantly greater levels of rumination about goals that they rated as more important, B = 1.780, $SE(B)$ = 0.355, z = 5.01, p < .001, but levels of goal rumination were not significantly associated with goal expectancy, B = 0.180, $SE(B)$ = 0.361, z = 0.50, p = .62. Inclusion of goal importance and expectancy significantly improved the model fit compared to the null model, $\chi^2(2) = 26.79$, p < .001.

Goal conflict and goal facilitation were then added. In support of hypothesis 1a, participants reported greater levels of rumination about goals that conflicted with other goals, B = 2.129, $SE(B)$ = 0.545, z = 3.91, p < .001,

but not about goals that facilitated other goals, B = -0.586, $SE(B)$ = 0.558, z = -1.05, p = .29. Inclusion of goal conflict and goal facilitation significantly improved the model fit, $\chi^2(2) = 637.44$, $p < .001$.

Following this, the four motives for goals were added. As hypothesised, participants reported greater levels of rumination about goals that they pursued for more introjected motives, B = 0.999, $SE(B)$ = 0.238, z = 4.20, $p < .001$, and less about goals pursued for intrinsic motives, B = -0.669, $SE(B)$ = 0.233, z = 2.87, p =.004. Goal rumination was not significantly associated with identified motives, B = -0.543, $SE(B)$ = 0.321, z = 1.69, p =.09, or external motives, B = -0.245, $SE(B)$ = 0.256, z = 0.96, p = .34. Inclusion of the four goal motives significantly improved the model fit compared to the previous model, $\chi^2(4) = 34.15$, $p < .001$.

Table 2 provides the results of the final model including between-and within-person predictors of goal rumination.

Table 2. Results of multilevel regression predicting goal rumination

Fixed effects	**Predictor**	***B***	***SE***	***z***	***p***
Between-person	Goal importance	-2.701	2.121	-1.27	.20
	Goal expectancy	0.311	1.521	0.20	.84
	Goal conflict	0.287	1.044	0.27	.79
	Goal facilitation	1.205	0.840	1.43	.15
	Goal intrinsic reasons	1.089	0.956	1.14	.25
	Goal identified reasons	3.331	1.372	2.43	.02
	Goal introjected reasons	0.682	0.808	0.84	.40
	Goal external reasons	1.88	0.787	2.40	.02
Within-person	Goal importance	1.577	0.379	4.16	<.001
	Goal expectancy	0.482	0.348	1.39	.16
	Goal conflict	2.378	0.508	4.68	<.001
	Goal facilitation	0.027	0.531	0.05	.96
	Goal intrinsic reasons	-0.669	0.233	2.87	.004
	Goal identified reasons	-0.543	0.321	1.69	.09
	Goal introjected reasons	0.999	0.238	4.20	<.001
	Goal external reasons	-0.245	0.256	0.96	.34

Random effects	Variance component	Variance	*SE*
	Between-person	13.036	3.472
	Within-person: between-goal	17.788	1.982
	Within-goal: between-day	28.992	0.893

In summary and in support of hypothesis 1a and 1b at the within-person level, people ruminated more about goals that conflicted more with other goals, and about goals that they pursued for more introjected and less intrinsic reasons. People also ruminated more about goals that were more important. Each of these variables explained unique variance in goal rumination.

Between-person predictors of perceived constructiveness of goal rumination

Hypothesis 2 predicted that introjected motives and goal conflict would be associated with lower levels of constructiveness of rumination, controlling for other variables.

Into a multilevel model predicting constructiveness of goal rumination, mean goal importance and mean goal expectancy were included, as between-person predictors. Mean goal importance was not significantly associated with individual differences in constructiveness of goal rumination, B = -0.128, $SE(B)$ = 0.268, z = 0.48, p= .63, nor was goal expectancy, B = 0.536, $SE(B)$ = 0.267, z = -2.01, p = .04. Inclusion of goal importance and goal expectancy did not significantly improve the model fit compared to the null model, $\chi^2(2) = 4.33$, p = .11.

Next, goal conflict and goal facilitation were included. Not supporting the hypothesis, mean goal conflict was not significantly associated with individual differences in constructiveness of goal rumination, B = -0.049, $SE(B)$ = 0.162, z = .30, p = .76, whereas goal facilitation predicted more constructive ruminative thoughts, B = 0.323, $SE(B)$ = 0.126, z = 2.56, p = .01. Inclusion of goal conflict and goal facilitation did not significantly improve the model fit compared to the previous model $\chi^2(2) = 6.44$, p = .04.

Following this, the four motives for goals were included. Individual differences in constructiveness of goal rumination were significantly predicted by external motives, B = 0.343, $SE(B)$ = 0.113, z = 3.04, p = .002, but not identified motives, B = 0.350, $SE(B)$ = 0.219, z = -1.74, p =.11, introjected motives, B = -0.216, $SE(B)$ = 0.124, z = 0.39, p = .08 or intrinsic motives, B = -

0.152, *SE*(*B*) = 0.145, *z* = 1.05, *p* =.29. Inclusion of the four goal motives did not significantly improve the model fit, $\chi^2(4) = 10.51$, *p* = .03.

In summary, at the between-person level, goal facilitation and external goal regulation were positively associated with individual differences in constructiveness of goal rumination.

Within-person predictors of perceived constructiveness of goal rumination

In the next step, goal importance and goal expectancy were included as within-person predictors. Participants reported significantly greater levels of constructiveness of rumination about goals for which they rated higher expectancy, *B* = 0.270, *SE*(*B*) = 0.056, *z* = 4.82, *p* < .001, but levels of constructiveness of rumination was not significantly associated with goal importance, *B* = 0.123, *SE*(*B*) = 0.055 *z* = 2.24, *p* = .03. Inclusion of goal importance and goal expectancy significantly improved the model fit, $\chi^2(2) = 33.27$, *p* < .001.

Next, goal conflict and goal facilitation were included. Participants' reported levels of constructiveness of rumination were positively associated with goal conflict, *B* = 0.197, *SE*(*B*) = 0.088, *z* = 2.24, *p* = .03, but not with the extent that goals facilitated other goals, *B* = 0.021, *SE*(*B*) = 0.091, *z* = 0.23, *p* = .82. Inclusion of goal conflict and goal facilitation significantly improved the model fit compared to the previous model $\chi^2(2) = 324.91$, *p* < .001.

Following this the four motives for goals were included. Counter to Hypothesis 2b, participants reported greater mean levels of constructiveness of rumination about goals that they pursued for more introjected motives, *B* = 0.135, *SE*(*B*) = 0.040, *z* = 3.38, *p* < .001, but not for more identified motives, *B*

= -0.065, *SE*(*B*) = 0.054, *z* = -1.20, *p* = .23, external motives, *B* = -0.046, *SE*(*B*) = 0.043, *z* = -1.07, *p* = .28, or intrinsic motives, *B* = -0.036, *SE*(*B*) = 0.039, *z* = -0.92, *p* = .36. Inclusion of the four goal motives significantly improved the model fit compared to the previous model, $\chi^2(4) = 15.05$, *p* = .005. Table 3 provides the results of the final model including between-and within-person predictors of constructiveness of goal rumination.

Table 3

Results of multilevel regression predicting constructiveness of goal rumination

Fixed effects	**Predictor**	***B***	***SE***	***z***	***p***
Between-person	Goal importance	-0.623	0.323	-1.93	.05
	Goal expectancy	0.582	0.232	2.51	.01
	Goal conflict	-0.142	0.159	-0.89	.37
	Goal facilitation	0.410	0.128	3.20	.001
	Goal intrinsic reasons	-0.165	0.146	-1.13	.26
	Goal identified reasons	0.419	0.209	2.00	.05
	Goal introjected reasons	-0.196	0.123	-1.59	.11
	Goal external reasons	0.330	0.120	2.75	.006
Within-person	Goal importance	0.085	0.064	1.33	.18
	Goal expectancy	0.306	0.059	5.17	<.001
	Goal conflict	0.223	0.086	2.59	.009
	Goal facilitation	0.077	0.090	0.86	.39
	Goal intrinsic reasons	-0.036	0.039	-0.92	.36
	Goal identified reasons	-0.065	0.054	-1.20	.23
	Goal introjected reasons	0.135	0.040	3.38	<.001
	Goal external reasons	-0.046	0.043	-1.07	.28

Random effects	Variance component	Variance	*SE*
	Between-person	0.284	0.081
	Within-person: between-goal	0.432	0.057
	Within-person: between-day	1.475	0.046

In summary and counter to Hypothesis 2, at the within-person level, people reported higher levels of constructiveness of rumination with goals that that they pursued for more introjected reasons. Also inconsistent with the hypothesis, higher levels of perceived constructiveness were associated with goals that conflicted more with other goals, as well as goals that they had a higher expectancy of achieving. Each of these variables explained unique variance in constructiveness of goal rumination.

Between-person predictors of goal progress

Hypothesis 3 predicted that intrinsic and identified motives would be associated with higher levels of goal progress and that goal conflict would be associated with lower goal progress, controlling for other variables.

Into a multilevel model predicting goal progress, mean goal importance and mean goal expectancy were included as between-person predictors. Mean goal expectancy was significantly associated with mean goal progress, $B = 0.778$, $SE(B) = 0.225$, $z = 3.45$, $p < .001$, whereas goal importance was not significantly associated with individual differences in goal progress, $B = -0.262$, $SE(B) = 0.226$, $z = -1.16$, $p = .25$. Inclusion of goal importance and goal expectancy significantly improved the model fit, $\chi^2(2) = 11.16$, $p = .004$.

Next, goal conflict and goal facilitation were included. As hypothesised, mean levels of goal facilitation were significantly positively associated with mean goal progress, $B = 0.286$, $SE(B) = 0.106$, $z = 2.70$, $p = .007$. Goal conflict was not significantly associated with individual differences in goal rumination, $B = -0.189$, $SE(B) = 0.136$, $z = -1.39$, $p = .16$. Inclusion of goal conflict and goal facilitation did not significantly improve the model fit compared to the previous model $\chi^2(2) = 6.90$, $p = .03$.

Following this, the four motives for goals were included. Mean levels of goal progress were significantly positively associated with external motives, *B* = 0.247, *SE*(*B*) = 0.098, *z* = 2.52, *p* = .01, but not with identified motives, *B* = 0.151, *SE*(*B*) = 0.190, *z* = 0.79, *p* =.43, introjected motives, *B* = -0.075, *SE*(*B*) = 0.107, *z* = -0.70, *p* = .48, and intrinsic motives, *B* = -0.093, *SE*(*B*) = 0.126, *z* = -0.74, *p* =.46. Inclusion of the four goal motives did not significantly improve the model fit, $\chi^2(4) = 7.32$, *p* = .12.

In summary, partially supporting Hypothesis 3 at the between-person level, goal facilitation was significantly associated with mean goal progress. Goal expectancy was also significantly associated with goal progress. There were no associations found with other variables and these findings failed to support hypothesis that intrinsic and identified motives will be associated with higher levels of goal progress.

Within-person predictors of goal progress

To test the within-person hypotheses, goal importance and goal expectancy were added as predictors. Participants reported significantly greater levels of progress for goals about which they had higher expectancy, *B* = 0.375, *SE*(*B*) = 0.053, *z* = 7.08, *p* < .001, but levels of goal progress were not significantly associated with goal importance, *B* = 0.076, *SE*(*B*) = 0.052, *z* = 1.46, *p* = .14. Inclusion of goal importance and goal expectancy significantly improved the model fit, $\chi^2(2) = 54.67$, *p* < .001.

Next, goal conflict and goal facilitation were included as predictors. Participants' levels of goal progress were not significantly associated with the extent that goals conflicted with one another, *B* = 0.070, *SE*(*B*) = 0.084, *z* = 0.83, *p* = .41, or facilitated other goals, *B* = 0.099, *SE*(*B*) = 0.086, *z* = 1.15, *p*

= .25. However, inclusion of goal conflict and goal facilitation significantly improved the model fit, $\chi^2(2) = 265.72$ $p < .001$.

Following this, the four goal motives were included as predictors. Participants' reported levels of progress were significantly negatively associated with goals that they pursued for identified motives, $B = -0.118$, $SE(B) = 0.053$, $z = -2.23$, $p = .03$, but not with goals that they pursued for more introjected motives, $B = 0.055$, $SE(B) = 0.039$, $z = 1.41$, $p = .16$, external motives, $B = -0.018$, $SE(B) = 0.042$, $z = -0.43$, $p = .67$, or intrinsic motives, $B = 0.017$, $SE(B) = 0.038$, $z = 0.45$, $p = .65$. Inclusion of the four goal motives did not significantly improve the model fit, $\chi^2(4) = 6.55$, $p = .16$. Table 4 provides the results of the final model including between-and within-person predictors of goal progress.

In summary, at the within-person level, goal expectancy was statistically significantly associated with goal progress, there were no associations found with other variables at the within-person level.

Table 4

Results of multilevel regression predicting goal progress

Fixed effects	**Predictor**	***B***	***SE***	***z***	***p***
Between-person	Goal importance	-0.449	0.274	-1.64	.10
	Goal expectancy	0.684	0.196	3.48	<.001
	Goal conflict	-0.299	0.135	-2.21	.03
	Goal facilitation	0.415	0.109	3.81	<.001
	Goal intrinsic reasons	-0.184	0.124	-1.48	.14
	Goal identified reasons	0.179	0.178	1.01	.31
	Goal introjected reasons	0.004	0.104	0.04	.97
	Goal external reasons	0.138	0.102	1.35	.18
Within-person	Goal importance	0.078	0.062	1.25	.21
	Goal expectancy	0.403	0.057	7.07	<.001
	Goal conflict	0.076	0.083	0.92	.36
	Goal facilitation	0.117	0.087	1.34	.18
	Goal intrinsic reasons	0.017	0.038	0.45	.65
	Goal identified reasons	-0.118	0.053	-2.23	.03
	Goal introjected reasons	0.055	0.039	1.41	.16
	Goal external reasons	-0.018	0.042	-0.43	.67

Random effects	Variance component	Variance	*SE*
	Between-person	0.182	0.059
	Within-person: between-goal	0.395	0.054
	Within-person: between-day	1.512	0.047

Discussion

The purpose of this study was to test whether different motives for goal pursuit predict unique variance in goal rumination, after accounting for other possible variables (goal importance, goal expectancy, goal conflict and goal facilitation) that may explain that relationship. Further investigation aimed to identify whether goal motives and goal conflict predict constructiveness of

rumination and goal progress. Findings will be summarized before discussing the study's strengths and limitations and giving recommendations for future research.

Support for this study's first hypothesis, that introjected motives for goal pursuit will be associated with higher levels of goal rumination, was found at the within-person level but not at the between-person level. Thus, individuals were more likely to ruminate about those goals that they pursued for introjected motives, but individuals with more introjected motives for their goals did not ruminate more about their goals in general. This is in line with Thomsen et al. (2011) and Moberly and Dickson's (2016) findings for introjected motives predicting goal rumination using a diary measure that improved on the ecological validity of these studies. Moberly and Dickson's (2016) findings however, were found at both the within-person and between-person levels. Within this study, I generally found more support for the within-person level compared to the between-person level. One explanation for this discrepancy could be due to the statistical power being much higher for within-person relationships so associations at this level are easier to detect: this sample was much smaller than Moberly and Dickson's (2016).

Consistent with the first hypothesis, participants reported higher levels of rumination about goals that conflicted with other goals at the within-person level, independent of the other goal variables. Boudreaux and Ozer (2013) found that higher levels of conflict were associated with greater psychological distress and negative affect which in turn links with a ruminative style of thinking (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). People are more likely to ruminate about conflicting goals because they are difficult to pursue

simultaneously, regardless of what people's motives for pursuing their goals are (Emmons & King, 1988). The model also showed, at the within-person level, that participants ruminated more about important goals and less about goals that were intrinsically motivated. In line with past research, higher levels of introjected motives were found to be associated with goal rumination (Thomsen et al., 2011) and higher levels of conflicting goals were associated with rumination (Emmons & King, 1988) but this study found that they predicted unique variance. This is evidence that motives and conflict are partly independent mechanisms; one mechanism does not explain rumination solely because of the other, e.g., conflict does not completely explain why people ruminate about goals pursued for introjected motives. Therefore, this testifies to the conceptual importance of organismic integration and SDT in terms of motivation.

Failing to support this study's second hypothesis, introjected motives for goal pursuits were associated with higher levels of perceived constructiveness of rumination at the within-person level but not at the between-person level. This finding could be a product of the fact that people ruminated more about introjected goals in general, so perceived constructiveness was reported as higher as a result of this. Support that goal conflict will be associated with lower levels of constructiveness of rumination was not found, but instead at the within-person level, higher goal conflict predicted more constructive rumination. An explanation may be that those with conflicting goals were more likely to ruminate about those goals but that this rumination was deemed to be helpful (Watkins, 2008). This may mean these individuals were employing strategies as a result of managing the

conflicting goals (Emmons, King, & Sheldon, 1993). It has been suggested that experiencing goal conflict can encourage initiation of strategies to manage the conflict such as re-evaluation or prioritisation (Emmons et al., 1993). Attention is drawn toward negative affect (Carver & Scheier, 1998) so potentially conflicting goals may receive more attention than facilitating goals and subsequently that attention is deemed as more constructive. This study expected that less constructive rumination would be associated with introjected motives because introjected motives do not predict progress. So rumination does not seem to translate into progress. These goals are more prone to provoking rumination which may result in people attending to their goals, thus perceiving the thinking as constructive (Wrosch, Scheier, Carver, & Schulz, 2003).

At the between-person level, goal facilitation and goals pursued for external motives were associated with constructiveness of rumination. Goal facilitation is associated with higher levels of goal attainment (Boudreaux & Ozer, 2012) so it would be expected that rumination about facilitating goals would be considered as constructive. One explanation for external motives being associated with higher levels of constructiveness of rumination, is that external motives were associated with higher levels of rumination. In this study there was found to be a significantly positive association between rumination and constructiveness of rumination, therefore this may explain the relationship as it is likely that people endorse greater constructiveness of rumination if they are ruminating more. At the within-person level, higher goal expectancy was associated with constructiveness of rumination, expectancy is highly correlated with goal progress (Carver & Scheier, 1998) so therefore

associated rumination may be adaptive. Another explanation may be that people have false confidence and make judgement about constructiveness of rumination on a heuristic basis, e.g., based on expectancy of making progress.

Support for the third hypothesis, that intrinsic and identified motives will be associated with higher levels of goal progress, was not found at the between-person level or within-person level. This goes against self-determination theory's claim that autonomous motives result in more goal directed effort and subsequently attainment (Sheldon & Elliot, 1998) and supporting evidence (Moberly & Dickson, 2016) that autonomous motives predict higher goal progress. A possible explanation for this may have been that within this study goal expectancy was covaried, which is highly correlated with autonomous motives and goal progress. This was done to provide consistency with other analyses predicting rumination and constructiveness. However, after rerunning the model without goal expectancy, no changes were found. SDT studies (Sheldon & Elliot, 1998) have looked at the relationship between goal motives and progress without considering facilitation/conflict, which was covaried within this study. Autonomous (and not controlled) motives are likely to overlap with facilitation, and this may explain why goal motives do not predict progress. For this outcome variable, it may be that motives are less important than whether goals facilitate or conflict with one another (whereas for rumination, both make independent contributions). Within this study support was found for goal facilitation being associated with higher levels of progress at the between-person level but not at the within-

person level (Boudreaux & Ozer, 2013), and goal expectancy was associated with goal progress at both levels.

Limitations of this study

This research draws mostly on a student sample, which can affect external validity, although students need to gain certain level of credits this may have slightly reduced the selection bias as a more diverse range of participants may have taken part. Single item questions were used within this study which may bring to question whether a single question can accurately measure the construct it reports to. However, supporting the rationale for this approach, Morren, Dulmen, Ouwerkerk, and Bensing (2009) advocate this to aid compliance in diary studies.

Repetitive thought is deemed to have both constructive (reflection) and unconstructive properties depending on the nature of the thinking (Watkins, 2008). This study focussed on rumination but to ascertain further clarity regarding the perceived constructiveness of thinking about goals, it may have been useful to incorporate a question regarding the nature of these thoughts in the diary. Watkins (2008) suggests that the basis of unconstructive rumination is that thoughts relate to negative, abstract thinking, therefore incorporating measures of this into the study would have enabled a better understanding of the type of rumination participants were engaging in and how it relates to motives for goal pursuit. Watkins and Moulds (2005) found that concrete self-focus has a positive impact on social problem solving ability in contrast with abstract self-focus.

All of the measures used in this study were self-report, so may be vulnerable to response bias due to social desirability (Van de Mortel, 2008).

For example, metacognitive judgements of constructive thinking may not be accurate. As mentioned earlier, people may be more likely to endorse constructive thinking because they have been ruminating more. Future research would benefit from using measures of constructiveness that are less confounded with rumination. Research on goal pursuit and the implications of goal motivation is a growing area. Measures for goal motivation have face validity but to ensure that measures are accurately measuring what they report to be measuring, future research would benefit from developing more valid and reliable measure of goal motivation.

In summary, this study offers a unique contribution by advancing on past research to measure goal rumination in an ecologically valid way. Findings were able to support past research (Moberly & Dickson, 2016; Thomsen et al., 2011) that people ruminate more about goals pursued for introjected motives. However, this study was unable to find a construct that fully explained why people ruminate more about goals pursued for introjected motives – further testifying to the link between poor self-integration of motives and ruminative thinking. Furthermore, this study found that introjected motives and goal conflict predict unique variance in goal rumination. This study has built on past research and found support for SDT theory regarding goal motives and rumination. Supporting people to pursue goals for more autonomous motives may have positive long-term benefits associated, such as increased well-being and in-the-moment thinking as people are able to pursue their goals more capably.

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Appendix A. Initial Questionnaire

Thank you for taking part in this study. Please complete the following questionnaire. I will be available should you need support in responding to any of the questions.

Please be sure that your data will be kept securely and will not be linked to your personal details. To ensure anonymity and that I can link both parts of your questionnaire I would like you to create a unique code, using the first three letters of your mother's maiden name and the date of your birthday. For example if your mother's maiden name was Jones and your birthday was 21.06.1989 then your code would be Jon21 Please enter your code below:

Please tick your gender:	
Female	
Male	
Transgender	
Intersex	
Prefer not to say	
Other	

Please record your age: | |

Please tick your current level of education:	
A level	
Undergraduate student	
Postgraduate student	
Masters	
Phd	

Other	

Over the last 2 weeks, how often have you been bothered by any of the following problems? (Please place a cross in the appropriate box)	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things				
2. Feeling down, depressed or hopeless				
3. Trouble falling or staying asleep, or sleeping too much				
4. Feeling tired or having little energy				
5. Poor appetite or overeating				
6. Feeling bad about yourself – or that you are a failure or that you have let yourself or your family down				
7. Trouble concentrating on things, such as reading the newspaper or watching television				
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual				

For each of the items below, please rate how well the item describes you by circling a number 1-7.	Not at all 1 2 3 4 5 6 7 Very Well
1. I find that my mind often goes over things again and again	1 2 3 4 5 6 7
2. When I have a problem, it will gnaw on my mind for a long time	1 2 3 4 5 6 7
3. I find that some thoughts come to mind over and over throughout the day	1 2 3 4 5 6 7

4. I can't stop thinking about some things	1 2 3 4 5 6 7
5. When I am anticipating an interaction, I will imagine every possible scenario and conversation	1 2 3 4 5 6 7
6. I tend to replay past events as I would have liked them to happen	1 2 3 4 5 6 7
7. I find myself daydreaming about things I wish I had done.	1 2 3 4 5 6 7
8. When I feel I have had a bad interaction with someone, I tend to imagine various scenarios where I would have acted differently.	1 2 3 4 5 6 7
9. When trying to solve a complicated problem, I find that I just keep coming back to the beginning without ever finding a solution	1 2 3 4 5 6 7
10. If there is an important event coming up, I think about it so much that I work myself up	1 2 3 4 5 6 7
11. I have never been able to distract myself from unwanted thoughts	1 2 3 4 5 6 7
12. Even if I think about a problem for hours, I still have a hard time coming to a clear understanding	1 2 3 4 5 6 7
13. It is very difficult for me to come to a clear conclusion about some problems, no matter how much I think about it	1 2 3 4 5 6 7
14. Sometimes I realize I have been sitting and thinking about something for hours	1 2 3 4 5 6 7
15. When I am trying to work out a problem, it is like I have a long debate in my mind where I keep going over different points	1 2 3 4 5 6 7
16. I like to sit and reminisce about pleasant events from the past	1 2 3 4 5 6 7
17. When I am looking forward to an exciting event, thoughts of it interfere with what I am working on	1 2 3 4 5 6 7
18. Sometimes even during a conversation, I find unrelated thoughts popping into my head	1 2 3 4 5 6 7
19. When I have an important conversation coming up, I tend to go over it in my mind again and again	1 2 3 4 5 6 7
20. If I have an important event coming up, I can't stop thinking about it.	1 2 3 4 5 6 7

PERSONAL STRIVINGS

One way to describe someone's personality is to consider the purposes or goals that the person seems to be seeking in his or her everyday behaviour. I am interested in the things that you typically or characteristically are trying to do. We might call these objectives "strivings". Here are some examples of strivings:

Try to be physically attractive to others
Try to persuade others that one is right
Try to help others in need of help
Try to seek new and exciting experiences
Try to eat healthily
Try to be punctual at work

Note that these strivings are phrased in terms of what a person is "trying" to do, regardless of whether the person is actually successful. For example, a person might be "Trying to get others to like me" without necessarily being successful.

These strivings may be fairly broad, such as "Trying to make others happy" or more specific, such as "Trying to make my boyfriend more confident."
You can see that this way of describing yourself is different from using trait adjectives (e.g. "friendly", "intelligent", "honest"). We do not want you to use trait adjectives. Since you may have never thought of yourself in this way before, think carefully about what I am asking you to do before you write anything down.

I want you to provide me with a list of your strivings. Please write 10 strivings using the lines below. Please keep your attention focused on yourself. Do not mentally compare the things that you typically do with what other people do. Think of yourself and your purposes alone. Be as honest and as objective as possible. Do not give simply socially desirable strivings or strivings which you think you "ought" to have.

You might find it useful to think about your strivings in different domains of your life: e.g. work and study, home and family, social relationships, and leisure/recreation. Think about all of your desires, goals, wants, and hopes in these different areas.

Take your time with this task; spend some time thinking about your strivings before you begin.

I typically try to .....

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Now please choose the 6 strivings that are most important to you from the 10 above and write them in the spaces below in any order (you can shorten the striving to a few words, so long as you remember which striving each represents).

1.
2.
3.
4.
5.
6.

For the following four questions, provide a score for each of the six strivings written above by writing a score in the appropriate column.

Strivings

		1	2	3	4	5	6
1. To what extent do you strive for this because somebody else wants you to or thinks you ought to, or because you'll get something from somebody if you do? External regulation	0 - not at all 1 - slightly 2 - somewhat 3 - moderately 4 - very 5 - extremely						
2. To what extent do you strive for this because you would feel ashamed, guilty, or anxious if you didn't (i.e., you feel you ought to have this striving)? introjected							
3. To what extent do you strive for this because you really believe that it's an important goal to have (i.e., this goal may once have been taught to you by others, but you now endorse it freely and value it wholeheartedly).identfied regulation							
4. To what extent do you strive for this purely because of the fun and enjoyment that it provides (i.e., while there may be many good reasons for the striving, the primary "reason" is simply your interest in the experience itself)? Intrinsic motivation							

Please now answer the questions below for strivings 1-6:

	How important is this striving to your life (i.e., how committed you are to working toward this striving)? (Not at all) 0 1 2 3 4 5 (Extremely)					
Striving no:	1:	2:	3:	4:	5:	6:
	In the next month, how much progress do you think you will make in this striving? (None at all) 0 1 2 3 4 5 (Extremely high Progress)					
Striving no:	1:	2:	3:	4:	5:	6:
	I find myself thinking about this striving even if I don't want to (Not at all) 1 2 3 4 5 6 7 (Extremely)					
Striving no:	1:	2:	3:	4:	5:	6:
	I go round and round in my mind about this striving (Not at all) 1 2 3 4 5 6 7 (Extremely)					
Striving no:	1:	2:	3:	4:	5:	6:
	I obsess about this striving (Not at all) 1 2 3 4 5 6 7 (Extremely)					
Striving no:	1:	2:	3:	4:	5:	6:
	I find it hard to shut off thoughts about this striving (Not at all) 1 2 3 4 5 6 7 (Extremely)					

Striving no:	1:	2:	3:	4:	5:	6:
	I don't ruminate or dwell on this striving for very long (Not at all) 1 2 3 4 5 6 7 (Extremely)					
Striving no:	1:	2:	3:	4:	5:	6:
	I can easily put this striving off my mind (Not at all) 1 2 3 4 5 6 7 (Extremely)					
Striving no:	1:	2:	3:	4:	5:	6:
	I rarely think about this striving (Not at all) 1 2 3 4 5 6 7 (Extremely)					
Striving no:	1:	2:	3:	4:	5:	6:

Striving Conflict

Please rate the level of conflict between your strivings by completing the grid below. First, please write your six strivings in the rows on the left of the table. Then rate the extent to which the striving in the row conflicts with the striving in the column using this scale:

The striving in the row conflicts with the striving in the column: 0 (not at all), 1 (slightly), 2 (somewhat), 3 (moderately), 4 (very), 5 (Extremely)

E.g. If working towards striving 1 makes it more difficult to pursue striving 2 then you might say they are very conflicting strivings and therefore score this as a 4. In the example below, the person has indicated that 'Get others to like me' makes it very much more difficult to 'Persuade others I am right'. We also ask you to rate the conflict between strivings the opposite way round. This is because it is possible that working towards striving X can make it harder to pursue striving Y, whereas working towards striving Y does not make it harder to pursue striving X. In the next row of the example, therefore, there is a space to enter a rating of the extent to which working towards striving 2 makes it more difficult to pursue striving 1. In the example below, the person has indicated that 'Persuade others I am right' makes it 'somewhat' more difficult to 'Get others to like me'. If you get stuck, just remember that for any given space you are rating the extent to which working towards the striving listed in that row makes it difficult to pursue the striving in that column

E.g.

Striving Number	1	2
1: Get others to like me		4
2: Persuade others I am right	2	

Striving Number	1	2	3	4	5	6
1:						
2:						
3:						
4:						
5:						
6:						

Striving Facilitation

Please rate the level of facilitation between strivings by completing the grid below, indicating the extent to which the striving in the row facilitates the striving in the column using this scale:

The striving in the row facilitates the striving in the column: 0 (not at all), 1 (slightly), 2 (somewhat), 3 (moderately), 4 (Very), 5 (Extremely)

E.g. If working towards striving 1 makes it very easy to pursue striving 2 then you might say they are very facilitating strivings and therefore score this as a 4. Again, we also ask you to rate the strivings the opposite way round. If you get stuck, just remember that for any given space you are rating the extent to which working towards the striving listed in that row makes it easier to pursue the striving in that column.

Striving Number	1	2	3	4	5	6
1:						
2:						
3:						
4:						
5:						
6:						

Appendix B. Online Diary Measures

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way in the last 24 hours.
1 (*very slightly or not at all*) 2 (*a little)* 3 (*moderately*) 4 (*quite a bit*) 5 (*extremely*)

Distressed	1	2	3	4	5
Excited	1	2	3	4	5
Upset	1	2	3	4	5
Scared	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Alert	1	2	3	4	5
Inspired	1	2	3	4	5
Nervous	1	2	3	4	5
Determined	1	2	3	4	5
Afraid	1	2	3	4	5

Please complete the questions below for each of the six strivings chosen during the initial session.

1. How much progress have you made on this striving in the last 24 hours?

0 (*no progress),* 1 (*slight),* 2 (*some)* 3 *(moderate),* 4 (*very much*) and 5 (*extreme progress*).

Striving Number	Score 0-5
Striving 1:	
Striving 2:	
Striving 3:	

Striving 4:	
Striving 5:	
Striving 6:	

2. How much effort have you made towards achieving this striving in the last 24 hours?

0 (*no effort),* 1 (*slight),* 2 (*some)* 3 *(moderate),* 4 (*very much*) and 5 (*extreme effort*).

Striving Number	Score 0-5
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

3. How much time have you spent thinking about this striving in the last 24 hours?

0 (*no time at all*), 1 (*a few moments),* 2 (*a few minutes)* 3 *(up to an hour),* 4 (*more than an hour*) and 5 (*almost all the time*).

Striving Number	Score 0-5
Striving 1:	
Striving 2:	

Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

4. In the last 24 hours, I found myself thinking about this striving even if I don't want to 1 (*not at all*) 7 (*extremely*)

Striving Number	Score 1-7
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

In the last 24 hours, I went round and round in my mind about this striving
1 (*not at all*) 7 (*extremely*)

Striving Number	Score 1-7
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	

Striving 5:	
Striving 6:	

In the last 24 hours, I obsessed about this striving

1 (*not at all*) 7 (*extremely*)

Striving Number	Score 1-7
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

In the last 24 hours, I found it hard to shut off thoughts about this striving

1 (*not at all*) 7 (*extremely*)

Striving Number	Score 1-7
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	

Striving 6:	

In the last 24 hours, I didn't ruminate or dwell on this striving for very long

1 (*not at all*) 7 (*extremely*)

Striving Number	Score 1-7
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

In the last 24 hours, I could easily put this striving off my mind

1 (*not at all*) 7 (*extremely*)

Striving Number	Score 1-7
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	

Striving 6:	

In the last 24 hours, I rarely thought about this striving

1 (*not at all*) 7 (*extremely*)

Striving Number	Score 1-7
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

6. In the last 24 hours, to what extent have your thoughts about this striving involved specific details, plans and concrete actions (i.e., thoughts about *how* you are pursuing the striving)?

0 (*not at all*), 1 (*slightly),* 2 (*somewhat),* 3 *(moderately),* 4 (*very*) and 5 (*extremely*).

Striving Number	Score 0-5
Striving 1:	
Striving 2:	
Striving 3:	

Striving 4:	
Striving 5:	
Striving 6:	

7. In the last 24 hours, to what extent have your thoughts about this striving been pleasant, (neutral) or unpleasant?

-3 (*very unpleasant*), -2 (*moderately unpleasant*), -1 (*slightly unpleasant*), 0 (*neutral*), +1 (*slightly pleasant*), +2 (*moderately pleasant*), +3 (*very pleasant*)

Striving Number	Score -3 to +3
Striving 1:	
Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

9. In the last 24 hours, to what extent has thinking about this striving helped you to make progress on the striving?

0 (*not at all*), 1 (*slightly),* 2 (*somewhat)* 3 *(moderately),* 4 (*very*) and 5 (*extremely*).

Striving Number	Score 0-5
Striving 1:	

Striving 2:	
Striving 3:	
Striving 4:	
Striving 5:	
Striving 6:	

Appendix C. Motivation and Emotion: Instructions to authors

Scope

Motivation and Emotion publishes articles that focus on motivational and emotional phenomenon. The journal seeks to publish articles that make a theoretical advance by linking empirical findings to underlying processes. Submissions to the journal should speak to an important problem in motivation and emotion study, and they should offer theory-based directional hypotheses.

Published articles are almost always explanatory rather than merely descriptive, as they provide the data necessary to understand the origins of motivation and emotion, to explicate why, how, and under what conditions motivational and emotional states change, and to document that motivational and emotional processes are important to human functioning. Essentially, articles that are excellent candidates for the pages of Motivation and Emotion are those that use and develop theory to explain the field's core concepts—human needs, cognitive and neural states capable of energizing and directing action, emotion, affect, and mood. Submissions in which motivational or emotional states are only incidental are not good candidates for publication.

A range of methodological approaches are welcomed, but methodological rigor generally speaking is the key criterion.

Manuscripts that rely exclusively on self-report data from questionnaires and surveys are welcome, but published articles tend to be those that rely on objective measures (e.g., behavioral observations, psychophysiological responses, reaction times, brain activity, and performance or achievement indicators) either singly or combination with self-report data.

The journal generally does not publish scale development and validation articles. The journal is, however, open to articles that focus on the post-validation contribution that a new measure can make. Scale development and validation work therefore may be submitted if it is used as a necessary prerequisite to follow-up studies that show how the new scale is instrumental in making a theoretical advance (such that the purpose of the article is to make a theoretical advance rather than to develop and validate a new measure per se).

The focus should be on human motivation and emotion. Any submission that utilizes non-human participants should be able to contribute to understanding human motivation and emotion.

Submission to the journal is an online process.

Manuscripts may be submitted to:

• http://moem.edmgr.com

Once logged into the online portal, you will be guided through the submission of your manuscript, including the uploading of files, in an easy, stepwise, and straightforward manner.

This system supports a wide range of submission file formats: for manuscripts - Word, WordPerfect, RTF, TXT and LaTex; for figures - TIFF, GIF, JPEG, EPS, PPT, and Postscript. PDF is not an acceptable file format. The Springer online submission and review system offers authors the option to track the progress of the review process of manuscripts in real time.

Each submission must be accompanied by a disclosure form.

- http://moem.edmgr.com

Publication Policies

Submission to the journal is a representation that the manuscript has not been published previously and is not currently under consideration for publication elsewhere. Before the manuscript can be accepted for publication, a statement transferring copyright from the authors (or their employers, if they hold the copyright) to Springer+Business Media, Inc. will be required. The Editor will supply the necessary forms for this transfer. Such a written transfer of copyright, which previously was assumed to be implicit in the act of submitting a manuscript, is necessary under the U.S. Copyright Law in order for the publisher to carry through the dissemination of research results and reviews as widely and effectively as possible.

Blind Review Policy

Motivation and Emotion relies on a masked review policy, which means that the identities of the authors are unknown ("blinded") to the reviewers and also that the identities of the reviewers are unknown to the authors. To conform to this policy, the authors' names and affiliations should not appear on the title page and self-referenced work, such as "in our earlier study, Smith and colleagues (2012)…", should not appear in the text of the manuscript.

Manuscript Style

Submissions are to be formatted according to APA style, as detailed in:

APA (2010). Publication manual of the American Psychological Association, 6th edition. American Psychological Association: Washington, DC.

Submissions should be structured as follows:

A Title Page lists the title of the manuscript but omits the authors' names, affiliations, and author notes.

An Abstract of 120 to 160 words offers information about the purpose of the paper, the sample and procedures, key results, and a clear statement of the implications of the findings. Below the Abstract, supply 4 or 5 keywords or brief phrases.

An Introduction introduces the research problem and explains why it is important. It describes relevant theory and past research, and provides testable, directional hypotheses.

A Method appears in subsections. A Participants section identifies the research participants and their demographic characteristics. A Procedures or Research Design section provides the timeline of events within the conduct of the study and states the experimental conditions or data analysis plan. A Measures section provides the measures used in the collection of the data and offers evidence of the psychometric properties of those measures.

The Results reports the analyses performed and the result of the statistic tests, especially those related to the hypotheses. Generally speaking, descriptive statistics are provided in tables or figures whereas the report of the statistical tests appears in the text.

The Discussion evaluates and interprets the findings and states their implications. The section should not simply reiterate the findings. Instead, it interprets the findings, integrates them into both theory and the existing empirical literature, offers suggestions for future research, acknowledges the limitations of the research, and addresses alternative interpretations.

A Conclusion section is optional. If provided, it should be a brief (usually a single paragraph) section that explicitly states the contribution of the study and it move the research literature significantly forward.

Many papers will feature multiple experiments. For these submissions, the arrangement of sections reflects the above structure but includes additional headings such as "Study 1", "Study 2", and "Study 3". Each study is to include its own Introduction, Method, Results, and Discussion sections.

For References, Footnotes, Tables, and Figures, follow the guidelines of the APA Publication manual. An Appendix may be an appropriate final section to provide stimulus materials or the items within a newly-developed questionnaire.